DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)
PHASE II
(Funded by World Bank)

PILLUR DAM

(PIC: TN12HH0071)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR DREDGING AND OPEN EXCAVATION

March 2023

Tamil Nadu Generation and Distribution Corporation (TANGEDCO), Tamil Nadu

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ACRONYMS

AIDS:	Acquired immune deficiency syndrome
BOCW:	Building and Other Construction Workers
COVID:	Corona VirusDisease
CoC:	Code ofConduct
CPCB:	Central Pollution Control Board
CPR:	Cardio Pulmonary Resuscitation
CPMU:	Central Project Management Unit
CWC:	Central WaterCommission
DCP:	Dry ChemicalPowder
DDMA:	District Disaster Management Authority
DG:	DieselGenerator
DRIP:	Dam Rehabilitation and Improvement Project
DSRP:	Dam Safety ReviewPanel
EAP:	Emergency ActionPlan
EHS:	Environment Health andSafety
EMC:	Engineering and Management Consultant
ESCP:	Environment and Social Commitment Plan
ESDD:	Environmental and Social Due Diligence
ESF:	Environmental and Social Framework
ESHS:	Environmental, Social, Health and Safety
ESI:	Employee's State Insurance
ESIA:	Environmental and Social Impact Assessment
ESMF:	Environmental and Social Management Framework
ESMP:	Environmental and Social ManagementPlan
ESS:	Environmental and Social Standard
GBV:	Gender BasedViolence
GRM:	Grievance Redressal Mechanism
HIV:	Human immunodeficiency virus
IA:	ImplementationAgency
IEC:	Information Education and Communication
IFC:	International Finance Corporation
LMP:	Labour Management Procedure
LPG:	Liquefied PetroleumGas
NDMA:	National Disaster Management Authority
NGO:	Non-GovernmentalOrganization
OHS:	Occupational Health & Safety
PDO:	Project Development Objective
PF:	ProvidentFund
PIU:	Project Implementation Unit
PPE:	Personal ProtectiveEquipment
PPEQMP:	Pollution Prevention and Environment Quality Management Plan
PST:	Project ScreeningTemplate

PUC:	Pollution under Control
QPR:	Quarterly Progress Report
RTI:	Right toInformation
SCADA:	Supervisory Control and Data Acquisition
SDMA:	State Disaster Management Authority
SEAH:	Sexual Exploitation, Abuse and Harassment
SEF:	Stakeholder EngagementFramework
SEP:	Stakeholder Engagement Plan
SOP:	Standard Operating Procedure
SPMU:	State Project Management Unit
ST:	ScheduleTribe
TDP:	Tribal DevelopmentPlan
WB:	WorldBank
WBG:	World BankGroup
WBGEHS:	World Bank Group's Environment Health and Safety
WRD:	Water ResourcesDepartment

CHAPTER 1: PROJECT OVERVIEW AND FINDINGS OF ESDD

1.1 PROJECTOVERVIEW

The proposed Dam Rehabilitation and Improvement Project (DRIP II) would complement the suite of ongoing and pipeline operations supporting India's dam safety program. The project development objective (PDO) is to increase the safety of selected dams in participating States and to strengthen dam safety management in India. Project Components include:

Component 1: Rehabilitation and Improvement of Dams and Associated Appurtenances (US$ 577.14 million);

Component 2: Dam Safety Institutional Strengthening (US$ 45.74 million);

Component3: Incidental Revenue Generation for sustainable operation and maintenance of dams (US$ 26.84million);

Component4: Project Management (US$ 68.13million).

Component5: Contingency Emergency Response Component (US$ 0million).

The project is likely to be implemented for 300 dams in 18 states across the country. The primary beneficiaries of the project are the communities that live in dam breach flood inundation areas and the communities that depend on water, irrigation and electricity services provided by the dams that could be compromised by poor dam performance or failure. In addition to saving lives, improved dam safety will avoid potential flood damage to houses, farm areas, infrastructure (roads, bridges, and other public and private infrastructure) and industrial and commercial facilities. Improved dam safety will also reduce the likelihood of service interruptions due to dam failure as well as potentially improving dam service provision, overall efficiency and storage capacity, including during droughtperiods.

1.2 OBJECTIVE AND CONTEXT OFESMP

A project level ESMF has been prepared and disclosed. In compliance with the ESMF, Environmental and Social Due Diligence has been carried out employing E&S risk screening templates. ESMF mandates that for all Low and Moderate Risk projects, a standard ESMP shall be prepared, which will be updated based on the sub project specific activities. Accordingly, Standard ESMP is prepared describing the process to manage the impacts identified during the ESDD. The ESMP also determines the implementation schedule, roles and responsibilities, reporting and monitoring requirements. The management plans included in this ESMP outline the environmental and social mitigation measures and management controls to be implemented in compliance with the E&S commitments.

This ESMP is a live document and is subjected to periodic review and updates. The Implementation Agency and contractors are primarily responsible for the implementation of the ESMP. Environmental and social management plans covering various phases, prepared as part of this ESMP shall be updated in line with the dynamics of project progress and stakeholder engagement inputs. If during the operationalization of this ESMP, new conditions emerge and risks and impacts differ from that identified in the ESDD, a new ESMP may be prepared adapting to the newconditions.

1.3 SUB PROJECTDESCRIPTION

The Pillur dam was constructed during 1961-1967 with Canadian assistance under Colombo Plan across river Bhavani with 87.78 m high and 357.20 m long masonry gravity dam. It Is 78 km away from Ooty and 49 Km away from Karamadai in the Coimbatore District. The Latitude of the dam is 11 ° 15' N, Longitude 76° 41' E. The dam is provided with spillway having 4 Nos of vertical lift type gates of size 12.20 m x 9.14 m each with a discharging capacity of 2830 Cumecs. Kundah Power House No.4 with an installed capacity of 100 MW (2 x 50 MW) is located at the toe of the Dam on the downstream side of the left flank.

The tail race water after power generation discharges directly into Bhavani River. This dam has been constructed as storage cum forebay for Kundah Power House - 4. The Pillur Dam is the tail end component of Kundah Hydro Electric Complex in Nilgiris Hills. This Dam picks up the tail waters of Kundah Power House - 3.

1.4 PROPOSED INTERVENTIONS/ ACTIVITIES AND INTENDEDOUTCOMES

The following rehabilitation proposals as described in the Project Screening Template (PST) have been formulated based on Dam Safety Review Panel (DSRP) recommendations.

- **Pilot Dredging and Open Excavation**
    - Clearing scrub jungle,
    - Mobilization and De-Mobilization,
    - 25,000 Cum Pilot Dredging,
    - Geo tubes of (Bio - Degradable - Woven)
    - 10,000 Cum Pilot open excavation.

Dredger collecting sediments by using a cutting head, transporting it to geo tubes.

Geotextile tubes being filled with sediments.

Scope of ESMP for various contractors:-

The applicability of scope of ESMP to various contract agencies would be as per the official scope of work defined in the signed contract agreement.

1.5 ESDD FINDINGS AND KEY IMPACTS TO BEADDRESSED

ESDD has been carried out considering the above proposals/interventions. The screening and site assessment exercise has identified the nature of risk and impacts, with level of risk and the outcomes are documented in ESDDreport.

As per the ESDD exercise, risk/impacts that have been identified relate to Water Quality, Physical Environment, labour and SEAH/GBV. The summarised environmental and social risks of identified activities with level of risk is presented in ESDD report. Environment risks of air, water, noise, land use, soil and resource use for paint work and road work are Moderate. Similarly, environment and social risk of labour camp and disposal of debris has been identified as moderate. Risk of all other activities has been identified as Low. These risks are low to moderate and localised, short term and temporary innature.

As per ESMF, Occupational Health and Safety (OHS) risk is envisaged across the project interventions / dams, a separate OHS plan in accordance with WBG Environmental Health and Safety (ESHS) Guidelines and Good Practice Note on Environmental, Health, and Safety approaches for Hydropower Projects (2018) shall be applicable to all sub-projects. Hence it was not being considered under screening criteria. Occupational health and safety is considered an important requirement and shall be managed as per OHS plan and will be part of Contractor'sESMP.

Based on ESDD findings, WB Environmental & Social Standards (ESS) applicability analysis and recommended management plan is given at Table 1.1.

Table 1.1 WB-ESS Applicability Analysis and Recommended management plan

WB-ESS	Recommended Management Plan	Applicability
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Gender Based Violence or SEA/SH related actions	Applicable
ESS2: Labour and Working Conditions	Labour Management Procedure including Occupational health and Safety	Applicable
ESS3: Resource Efficiency, Pollution Prevention and Management	Pollution Prevention and Environment Quality Management Plan including Debris Management	Applicable
ESS 4: Community Health and Safety	Community Health and Safety Plan	Applicable
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Resettlement Action Plan/ Livelihood improvement Plan	Not Applicable
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural resources	Biodiversity Conservation Plan	Not Applicable

ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Tribal Development Plan	Not Applicable
ESS 8: Cultural Heritage	Cultural Heritage Protection Plan	Not Applicable
ESS 10: Stakeholder Engagement Plan	Stakeholder Engagement Plan	Applicable

The above recommended plans are discussed in detail in Chapter 2.

CHAPTER 2: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

The E&S management plans prepared for the risks and impacts identified as part of ESDD are presented hereunder. Each plan includes mitigation measures specific to the risks and impacts and where applicable, sets out the framework for other plans and procedures to be developed later in the Project. Construction contractors will develop and implement their own site-specific C-ESMPs.

2.1 GENDER BASED VIOLENCE OR SEA/SH RELATED ACTIONS(ESS1)

The following key actions are to be ensured during implementation:

S. No.	Key Action to address GBV/SEA/SH Risks	By Whom
1	Clearly define SEA/SH requirements in Bid-documents and also the requirement for a CoC which addresses SEA/SH, using Standard WB procurement documents	SPMU
2	Operationalize or constitute Internal Complaints Committee as per Prevention of Sexual Harassment at Workplace procedure	SPMU
3	Implement appropriate project-level activities such as: Separate, safe and easily accessible facilities for women and men in the place of work and the labour camps. (e.g., toilets should be located in separate areas, well-lit)display signs that the project site is an area where SEA/SH is prohibited.	Implementation by Contractor / GBV Focal Point at SPMU & overall supervision by Engineer inCharge
4	Ensure Codes of Conduct are clearly understood and signed by those with a physical presence at the project site; Train project staff on the behavior obligations under the CoCs and Disseminate CoCs (including visual illustrations) and discuss with employees and local communities.	Engineer in Charge Contractor
5	Undertake regular M&E of progress on SEA/SH prevention and response activities, including reassessment of risks as appropriate.	GBV Focal Point at SPMU/IA

Implementation costs would include: preparation of sign boards, posters, conducting of awareness trainings by Implementing Agency and also by Contractor.

2.2 LABOUR MANAGEMENT PROCEDURE(ESS2)

2.2.1 OVERVIEW OF LABOUR USE IN THEPROJECT

Number of Project Workers: Approximately 40-50 workers at different points of time (Direct workers, Contracted workers and Community workers) shall be engaged for the rehabilitation works

Characteristics of Project Workers: As per the proposed execution strategies for all Low to Moderate risk sub-projects, the following categories of project workers are identified:

i) Direct workers – all the existing dam site officials including those sent on deputation from other departments involved in the projectactivities;

ii) Contracted workers - all IAs would engage Contractors to undertake rehabilitation works;agencies/firmstosupportcoreservicefunctionssuchasSCADAsystems,etc.

These contractors shall bring skilled Migrant workers for some of more specialized tasks; and

iii) Community workers (or volunteers particularly forEAP).

Timing of Labour requirements: See Table below:

S.No.	Type	Numbers	Locations	Duration	Skills required
1	Direct Workers (Project officials)	5-7	Dam site	Throughout	Executive and Supervisory
2	Contracted Workers	30-40	Dam site	6 months	Varied (skilled, semi-skilled)
3	Community Workers	10-15	Villages/areas in the vicinity of the dam	Only during EAP implementation	Community facilitation skills

Hence as per WB's guidance note[1], for such workers, Contractor needs to prepare detailed profile of Workforce as per table below:

Key work activities	Schedule for such activities	Duration of contract	Rotation	Place of residence		
				workers from community	Within local community	On site

2.2.2 ASSESSMENT OF KEY POTENTIALRISKS

Labour related risks would include:

- Safety issues while at work like injuries/accidents/ fatalities, Occupational health and safety risks due to exposure of workers to unsafe conditions while working at heights, working using lifts, handling of equipment and machinery, exposure to air and noise pollution etc. will be addressed through OHSguidelines.
- Short terms effects due to exposure to dust and noise levels, while atwork
- Inadequate accommodation facilities for labour, including inadequate sanitation and healthfacilities
- Discrimination in Employment (e.g., abrupt termination of the employment, working conditions, wages or benefitsetc.)
- Sexual harassment atwork
- Absence or inadequate or inaccessible emergency response system for rescue of labour/workforce in situations of naturalcalamities.
- Health risks of labour relating to HIV/AIDS and other sexually transmitteddiseases
- Non-payment ofwages
- Unclear terms and conditions ofemployment

[1]ESF/SAFEGUARDS Interim Note: COVID-19 consideration in constructions/civil works projects

- Discrimination and denial of equal opportunity in hiring and promotions/incentives/trainingopportunities
- Denial for workers' rights to form worker's organizations,etc.
- Absence of a grievance mechanism for labour to seek redressal of their grievances/issues

2.2.3 RESPONSIBLESTAFF

See Table below for list of key activities with responsibilities:

S.No.	Activity	Responsibility
1	Engagement and Management of Contractors	SPMU of IA (e.g., WRD)
2	Engagement and Management of Sub-Contractors	Contractor
3	Occupational Health and Safety (OHS)	Engineer-In-Charge
4	Training of Workers	Engineer-In-Charge
5	Addressing worker grievances	Contractor (with oversight by IA)

2.2.4 POLICIES ANDPROCEDURES

These are listed below under the following sub-headings: i) Incidents and Accident Notification; ii) GBV/SEAH related iii) Occupational Health and Safety; and iv) COVID considerations.

i) **Incidents and Accident Notifications:** The contractor will promptly notify to the IA/SPMU within 24 hours any major incident or accident having significant impact on the environment, tangible cultural heritage, communities, the public or workers. They will provide sufficient detail regarding the incident or accident, indicating immediate measures taken to address it, and including information provided by any contractor and supervising entity. Further the SPMU will apprise this to CPMU andWB.

ii) **GBV/SEAH related:** More than 95% of the contract labour is expected to be men, and women's participation as contract labour or community labour is going to be very low. Contractors will need to maintain harmonious relations with local communities by ensuring labourers/workers adhere to Code of conduct (CoC). The CoC commits all persons engaged by the contractor, including sub-contractors and suppliers, to acceptable standards of behaviour. The CoC will include sanctions for non-compliance, including non-compliance with specific policies related to gender-based violence, sexual exploitation and sexual harassment (e.g., termination). The CoC will be written in plain language and signed by each worker to indicate that theyhave:

- received a copy of the CoC as part of theircontract;
- been explained the CoC to them as part of inductionprocess;
- acknowledged that adherence to this CoC is a mandatory condition ofemployment;
- understood that violations of the CoC can result in serious consequences, up to and including dismissal, or referral to legalauthorities.

To mitigate potential risks related to on-site safety and GBV, the Contractor/ will undertake actions as given in Table below:

No.	Action	Timelines
1	Separate, safe and easily accessible facilities for women and men in the place of work and the labour camps. (e.g., toilets should be located in separate areas, well-lit)	Throughout construction period
2	Display signs that the project site is an area where SEA/SH is prohibited.	Throughout construction period
3	Ensure Codes of Conduct are clearly understood and signed by those with a physical presence at the project site;	Upon joining
4	Train project staff on the behavior obligations under the CoCs and Disseminate CoCs (including visual illustrations) and discuss with employees and local communities.	Periodic; every six months

Occupational Health and Safety:

IA is committed to:

- Complying with legislation and other applicable requirements which relate to the occupational health and safetyhazards.
- Enabling active participation in OHS risks elimination through promotion of appropriate skills, knowledge and attitudes towardshazards.
- Continually improving the OHS management system andperformance.
- Communicating this policy statement to all persons working under the control of IA with emphasis on individual OHSresponsibilities.
- Availing this policy statement to all interestedparties.

To avoid work related accidents and injuries, the contractor shall ensure following Do's and Don'ts at site will:

- ***Pre-employment Health Check-up***: Ensure that health of each worker is checked and health record is maintained before deputing them towork.
- ***Deployment of EHS officer :*** Designate a person responsible for OHS who is fully acquainted with handling of OHSissues
- ***Induction training***: Ensure that every worker is given OHS orientation training which will include use of PPE, first aid, use of fire extinguishers, action to be taken in case of accidents, caution to be exercised during working at height or confined areas, respecting system and procedures evolved at site for safe working. Training shall create enough awareness amongst workers so that they take reasonable care to avoid acts or omissions that are likely to result in injury to self, or the other workers/and otherpeople.
- ***First Aid***: Ensure that first aid box is provided at each workplace with easily identifiable location. Few workers shall be trained as first aider including in CPR techniques.
- ***PPE***: Ensure availability of PPE. Helmet, boot, earplug (for noisy areas), mask for dusty areas, gloves, safety belt and safetyjacket.
- ***SOPs:*** Define SOPs (standard operating procedures) for Working at height or confined areas which will include minimum two persons working, one at work and another standby asrescuer.
- ***Ventilation***: Maintain adequate ventilation at confined areas and atworkplace.
- ***Illumination***: Maintain adequate illumination at allworkplaces.
- ***Electric Hazards***: Prevent exposure to electricalhazards.

- ***Fire Protection***: Ensure adequate fire extinguisher (as per type of fire hazard viz A, B, C) are placed atworkplace.
- ***Dust Control:*** Ensure that workers are not exposed to high dust and noise level which can affect their health. Use dust suppressing system like water sprinkling and muffler or acoustic enclosures for noise generatingsystem.
- ***Gas Cylinder handling***: Acetylene and oxygen/gas cylinders shall be handled using trolley where these cylinders are securely separated with each other for its safeuse.
- ***Drinking Water and Sanitation***: Ensure that safe drinking water is available at each work site. Also, mobile toilets fitted with anaerobic sewage treatment system are provided at each worksite.
- ***Barricading and securing the work areas***: Each hazardous work area, if any, have safety barricading depending on nature of hazard viz trip, fall danger, restricted entry area, electricalhazard.
- ***Safety Signage and Mock Drill***: Place adequate safety caution and signage in local languages for awareness to workers. Also conduct periodic mockdrill.
- ***Back-up Medical facility***: identify and tie up with equipped hospital(s) capable of providing ambulance and medical facilities or handling majorinjuries.
- ***Accident*** Reporting ***Analysis and Prevention***: Identify the reportable accidents[2], analyse the cause of each reportable accident, maintain the record with analysis and take corrective action based on cause analysis for prevention of such accidents in future.
- ***Caution from Covid-19 scenario***: Provide multiple entries for workers to avoid crowding depending upon site condition. Ensure that physical distancing is maintained as far as possible at workplace. Each worker shall be provided with face mask.
- ***Compliance to law***: Ensure those legal requirements are followed like restriction on use of Child labouretc.

DON'T

- Do anything which may leads to risk to established health, safety and well-being rules or relevant health, safety and well-being regulatoryrequirements.
- Jeopardize mental and physical well-being or that of people you work with by, for example, imposing unreasonable deadlines or regularly demanding longer working hours.

Further to enforce the compliance of environmental management, contractors will be responsible and liable for safety of site equipment, labours and daily workers attending to the construction site and safety of citizens for each work site, as mandatory measures.

<u>Occupational Health and Safety Monitoring</u>

OHS compliance monitoring will be carried out by designated E&S Expert every month. Contractor will provide compliance in initial report to Engineer in charge and thereafter submit a compliance report every 3 months. Following shall be covered as part of OHS monitoring:

- Health check-up records of workers, asapplicable.

[2]An accident which causes death or which causes any bodily injury by reason of which the person injured is prevented from working for a period of forty-eight hours or more immediately following the accident (as per Building and Other Construction Workers Act, 1996)

- Accident hot spots on transport route, ifany
- Training and awareness of labour – OHS, Emergency Management, Use ofPPEs
- Identification of hazardous working locations andmarking
- Emergency responseprocedure
- Availability of PPEs – types,numbers
- Accident reporting

Communication and Consultation (Workers)

Worker's consultation will be regular features. However, this aspect shall be as per consultation process defined under other plans and ESS4.

Training and Records

Contractor will provide training to all workers before start of work and thereafter every three months. He will maintain training records and share the details with E&S experts of the dam as part of his quarterly progress report. The training should cover the following:

- General awareness about the site, type of works to be carried out and risksinvolved
- Use of appropriate PPEs for different types of works including dust masks and ear muffs
- Following work instructions for hazardous/risky operations as marked onsite
- How to act during emergency including basic rescue operations and accident reporting
- Location of first aid boxes and fire extinguishers and how to usethem
- Handling of gascylinders

Emergency Preparedness and Management

Emergency Preparedness and Management Plan shall be followed as given under ESS 4

Reference to World Bank Group – (WBG) Environmental Health and Safety (EHS) andOther Guidelines

The WBG Guidelines of Environmental Health and Safety (WBGEHS) provide detailed guidance note on health and safety requirement and good practices. The WBGEHS guidelines are intended to be used in conjunction with Indian legislation on OHS at construction sites and shall be referred by contractor and IAs while finalizing site specific contractor's EHS management plan.

2.2.5 AGE OFEMPLOYMENT

The minimum age of employment for this project shall be 18 years and to ensure compliance, all employees will be required to produce Aadhaar card or any other valid proof of age. If any contractor employs a person under the age of 18 years, that contractor will not only be terminated by IA but also be reported to theauthorities.

2.2.6 TERMS ANDCONDITIONS

Terms and conditions for three types of workers are presented below:

i. The Direct Workers (Dam officials, government officials) are governed by their employment agreements with the Water ResourcesDepartment

ii. Contractors will also be required to comply with the most current Regulation of Wages for the Building and Construction Industry which is issued by the Government and reviewed on a regular basis. The Minimum Wage Act specifies the minimum wages, hours of work, overtime pay, leave entitlements, travelling and Subsistence Allowances and the issue of protective clothing. Before a contract is awarded, contractor is required to certify in writing that the wages, hour and conditions of work or persons to be employed by him on the contract are not less favorable than those contained in the most current wages regulation issued by the Labour Commissioner. Where a contractor fails to comply with this requirement, the contract with the contractor may be withdrawn as an approved contractor upon recommendations of the LabourCommissioner.

In ensuring full compliance with the law in this regard, contractors will be required to furnish with copies of the labour license and/ or copies of contract of all its workforce. As a monitoring mechanism, a contractor shall not be entitled to any payment unless he has confirmed that all employment conditions of the contract are being complied with. The IA would intervene if the contractor defaults in the payment of wages due to any of its employees.

'Community Workers' is further detailed in following sections.

2.2.7 GRIEVANCEMECHANISM

The Grievance Mechanism for Workers will be organized as follows.

i. **Direct Workers (Project Officials):** The Executive Engineer, Dam Authority, will be responsible for providing guidance and advice on all worker related grievances and their redressal, in line with the state and national legislation and theLMP.

ii. **Contract Workers:** While the Contractor will have his own GRM, the IA (Water Resources Department will have oversight) and the overall responsibility for ensuringtheestablishment and implementing the GRM for project workers. In this regard, the Executive Engineer will be responsible to ensure that the Contractor has established and operationalized the contract workers grievance redress mechanism. In this, Contractor will be supported by Environment and Social nodal officers by IA designated for the purpose. S/he will also be responsible for tracking and resolving workers grievances. S/he shall maintain records where grievances and complaints, including minutes of discussions, recommendations and resolutions made, will berecorded.

iii. **Community Workers:** The Executive Engineer, Dam Authority, will be responsible for providing guidance and advice on all community worker related grievances with thisLMP.

The designated Social Expert in SPMU will provide overall implementation and capacity building support on resolving all workers grievances and will support the Executive Engineer in this regard. S/HE will also include workers grievance status in the progress report. Grievances will continue to be received through established communication channels. Workers will also be able to submit their grievances through the district Labour Department, whose contacts will be shared with all the contractors andworksites.

2.2.8 CONTRACTORMANAGEMENT

IA will ensure that contractor monitor, keep records and report on terms and conditions related to labour management. The contractor must maintain records with evidence of all payments made, including social security benefits, pension contributions or other entitlements, as applicable based on workers engagement i.e.-fixed term contract, full-time,

part-time or temporary. The application of this requirement will be proportionate to the activities and to the size of the contract, in a manner acceptable to CPMU and the World Bank.

Labour conditions: records of workers engaged under the Project, including contracts, registry of induction of workers including CoC, hours worked, remuneration and deductions (including overtime), collective bargaining agreements;

Safety: Reportable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, and so forth).

Workers: number of workers, indication of origin (local and migrant), gender, age with evidence that no child labour is involved, and skill level (unskilled, skilled, supervisory, professional, management).

Training/induction: dates, number of trainees, and topics.

Details of any security risks: details of risks the contractor may be exposed to while performing its work; the threats may come from third parties external to the project. Worker grievances: details including occurrence date, grievance, and datesubmitted;

actions taken and dates; resolution (if any) and date; and follow-up yet to be taken; grievances listed should include those received since the preceding report and those that were unresolved at the time of that report.

2.2.9 COMMUNITYWORKERS

All OHS related aspects shall be applicable to this category of workers also, if they are engaged.

2.3 RESOURCE EFFICIENCY AND POLLUTION PREVENTION(ESS3)

2.3.1 POLLUTION PREVENTION AND ENVIRONMENT QUALITY MANAGEMENT PLAN(PPEQMP)

Dam rehabilitation work in general can be categorized as Pilot Dredging and Open Excavation works; requiring labour involvement for works, use of resources such as raw material, water and power during construction, pollution generation from storage and handling of material, generation of waste, use of paints and other chemicals for construction activities and generation of hazardous waste, transportation of raw material, etc. As all the proposed structural interventions are within the dams' premises, no adverse impacts are envisaged on communities including on the disadvantaged or vulnerable people.

Resource Efficiency, Pollution Prevention and Management plan is prepared to address potential risks identified with respect to resource use and pollution generation from civil, hydro-mechanical and painting work and also from labour camps and colonies.

2.3.2 OVERVIEW OFPPEQMP

a) WaterManagement

The proposed intervention activities are not expected to impact water resources as the proposed interventions are neither crossing, altering or disturbing drainages nor impacting ground water resource in any form. Use of resources such as water and power will be

optimized before start of work.

Construction related impacts and risks for water quality include:

- Accidental release of fuel or chemicals and contamination from poor waste management practices can affect surface and groundwater; although quantum of waste is expected to besmall.
- Fuel/oil leakage from construction machinery working near waterbodies
- Construction work along riverbank
- Generation of sanitary wastes from labour colony and construction sites finding way to waterbodies

Pollution prevention and control measures to avoid surface water pollution shall include:

- Labour camp will have adequate sanitation arrangement in terms of mobile/fixed toilet with arrangement of sewage collection and disposal. No wastewater fromthecamp/work force site shall be discharged directly without any treatment in to any surface water channels or drain, which eventually joins surface waterbodies.
- The oil/lube storage shall be under roofed areas with impermeable cement concrete surfaces and provided with separate drainage system with oil separators. No discharge from oil/lube storage areas shall be directly discharged in to any open surface water channel/ streams.
- No construction debris and/or spills of construction materials are dumped on to stream waterway.
- Construction work along river bank shall be done in lean season when surface water level has receded and clear construction area isavailable.
- Activities like work on upstream side of dam (reservoir side) will be taken up only when the water level is low and clear work area is available. Adequate protection needs to be provided to avoid spillage of chemicals/construction material inreservoir.

b) Air QualityManagement

Construction activities can give rise to dust emissions if not effectively managed and have the potential to affect receptors near to the main construction sites due to dust generated from demolition, excavation, operation of construction equipment and machinery, increased movement of vehicles, onto the local road network. Earth works will result in exposed areas of soil which will potentially generate dust when the weather is windy. The level and distribution of dust emissions varies according to the duration and location of activity, weather conditions, and the effectiveness of suppressionmeasures.

Gaseous emission during construction will be from machinery, equipment and vehicles used for material transportation. The operation of vehicles and equipment will result in emissions of carbon monoxide, Sulphur dioxide, and oxides of nitrogen. In particular, all commercial vehicle driven with diesel fuel is often used in India. Impact is expected to be localised. Keeping in view the quantum of work and requirement of raw material, only marginal increases in number of vehicles is expected and therefore emission on village road due to vehicular movement will not be significant, however, OHS norms and do's and don'ts will be adhered to for vehicular movement.

As the project is presently operational and the interventions are not going to alter the project operation in any manner, no operational phase impacts are envisaged on ambient air quality.

Pollution prevention and control measures to avoid air pollution shall include:

Among the air pollutants, dust levels in term of $PM_{2.5}$ and PM_{10}, is the most significant. In order to prevent and control the dust levels, the following measures are to be strictly adhered to:

- The contractor/transporter shall carry valid PUC (Pollution under Control) certificate and only compliant vehicles shall be deployed duringconstruction.
- The vehicles and equipment used during construction should be we well maintained, to ensure minimum emissions. Engineer in Charge will carry out physical inspection to ensurecompliance.
- The contractor shall provide wind barrier, if required, depending on most prevailing wind direction and presence of sensitive receptors at downwind side, at perimeter of construction site to arrest or blowing of suspendedparticle.
- Regular sprinkling of the water will be done on construction sites for dust suppression if there is potential of dust emission from storage of handling of losematerial
- If power connection is not available, Mobile DG sets may be used for lighting only during construction phase and they should meet emission and noise standards as per guidelines/standards issued byCPCB.
- All the construction workers and other staff, who get directly exposed to dust, should necessarily be provided with dustmasks.

c) Noise and VibrationControl

Sources of noise will be the vehicles and equipment for construction at the project sites. Due to construction activity in the area, noise levels will increase during the period of construction, however, they will remain limited to the work area mainly where construction activity will progress.

Impact of noise generation due to operation of construction machines and equipment is the exposure of workers operating these machines and other who are working in the surrounding. Such impacts can become significant if they are exposed to high noise for long hours continuously.

Pollution prevention and control measures to avoid Noise pollution shall include:

- DG sets, if required, will have a valid Type Approval Certificate and Conformity of Production certificate as per CPCBguidelines.
- All the construction equipment will be required to use available noise suppression devices and properly maintainedmufflers.
- Workers in high noise area, will be provided with ear muffs. Worker's exposure (time duration) to high noise will also becontrolled.
- Minimize the use of noise producing equipment during night hours to avoid the disturbance to locals and wild animals of surroundingarea.
- Vehicles to be equipped with mufflers recommended by the vehiclemanufacturer.

- Movement of vehicles on village roads especially heavy vehicles for transportation of construction material, equipment, etc. shall be done during day timeonly.

d) Waste Management from Hydro-mechanicalworks

Project interventions include hydro-mechanical work such as repair/replacement of hoists and ropes, repair and general maintenance and up-keeping of gates, etc. These activities will generate waste in terms of replaced parts, packaging material, empty containers, use and disposal of oil & grease, iron scrap, etc. There will be a mix of hazardous and non-hazardouswastes. It is important to have a plan ready for disposal of such wastes before start of the activity.

Pollution prevention and control measures with respect to waste management: Project engineer needs to identify all the waste generated from hydro-mechanical work including replaced parts with estimated quantities and categorization as hazardous and non-hazardous waste. Storage and disposal of removed parts need to be planned by Executive Engineer; separately for hazardous waste which will be given to authorised vendors only.

e) DebrisManagement

Rehabilitation work will generate and construction debris due to repair and demolition works such as repairs to masonry portion of dam: u/s face treatment, dam pier chipping and other repair works etc., operation of construction equipment and machinery and waste generation thereof,etc.

Pollution prevention and control measures in respect of Debris management shall include:

- debris disposal site shall be identified by contractor and concerned Executive Engineer together and necessarily avoid natural watercourses.
- While identifying such locations, endeavor would be to find low lying areas nearby so as to avoid effort of transportingdebris.
- Area on the course of natural drainage should beavoided.
- The construction debris from all operational areas shall be regularly scavenged and disposed of at identified disposal sitesonly.
- No dump site shall be located in forestarea.
- No dump site shall be located on agriculturalarea.
- The Contractor shall educate his workforce on issues related to disposal ofwaste.
- The debris disposal sites have to be suitably rehabilitated by leveling and restoring to original conditions and slopes stabilized.
- If required, grass and local shrubs should be planted to rehabilitate thesite.

2.3.3 HOW WATER AND OTHER RESOURCE USE WILL BEPLANNED

Resource planning will be done by contractor in consultation with engineer in charge. After award, the contractor will make an estimate of the raw material requirement, sources for procurement and transportation route. Contractor will discuss the plan with Engineer in Charge at site and get approval.

Material to be procured from quarry/borrow area, shall be identified by contractor along with source. Approval status will be submitted to engineer in charge for consent.

Requirement of water and power at various locations for construction work and labour camp shall be established by contractor and discussed with Engineer in charge. Locations, where DG power is to be used, shall be identified along with location of DG set and its noise and emission impacts on labour and community. Mitigation measures such as ear muffs for labour and sound barrier for community, if required shall beestablished.

2.3.4 ENVIRONMENTAL QUALITY MONITORING PLAN ANDPROTOCOLS

This being rehabilitation work limited to dam area only with localised impacts which can be managed by implementing standard ESMP, environment quality monitoring is not required, except for visual inspections. These requirements are indicative and can be altered and modified as per project components and activities proposed.

Environment Quality monitoring requirements are tabulated below:

Activity	Parameters	Locations	Frequency	Responsibility
Ambient Air Quality	Physical inspection to ensure dust emission from rehabilitation work is not affectingthe labour/community	All rehabilitation worksites	Once during the construction period and one at end of rehabilitation work	Engineer in charge
Sound Levels	Physical inspection to ensure that noise generation from rehabilitation work is not affecting the labour/community	All rehabilitation worksites	Once during the construction period and one at end of rehabilitation work	Engineer in charge
Wastewater discharge	Physical inspection to ensure wastewater from rehabilitation work is not being disposed of in river	All rehabilitation worksites using water	Once every month	Engineer in charge
Debris handling and disposal	Physical inspection to ensure debris from rehabilitation work is being securely disposed of at identified and approved location	All rehabilitation worksites generating debris	Once every month	Engineer in charge
Storage and disposal of hazardous waste	Physical inspection to ensure hazardous waste is being segregated and securely disposed of to authorised vendors	All rehabilitation worksites generating hazardous wastes	Once every month	Engineer in charge

2.3.5 REPORTING

Contractor will prepare a Quarterly Progress report (QPR) and submit to Engineer in Charge. The report will cover the compliance status of the Project with the ESMP in their scope and

shall include Debris Management, Resource Conservation and Pollution Prevention Plan implementation. The Engineer in Charge through E&S expert at SPMU will include its own monthly inspection report and submit the report to SPMU/IA every quarter.

2.4 COMMUNITY HEALTH AND SAFETY(ESS4)

2.4.1 OVERVIEW

Dam rehabilitation work, although limited to dam complex, can increase community exposure to risk and impacts. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of SPMU/IA to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable. Occupational health and safety (OHS) requirements for project workers are set out in ESS2, and measures to avoid or minimize impacts on human health and the environment due to existing or potential pollution are set out in ESS3. ESDD has identified that there will not be any direct risks and impacts on communities due to proposed rehabilitation work including those who are vulnerable. Following sections propose mitigation measures in accordance with mitigation hierarchy to mitigate any indirect impact oncommunities.

2.4.2 HAZARDIDENTIFICATION

Implementations of sub-project activities pose minimum risk to community health and safety risks as the proposed rehabilitation work will be limited to dam area only. However, transportation of material; setting up of labour camp; influx of workers, though small in number and generally skilled workers only; pollution generation from rehabilitation work; may have indirect impact on community as identified in the ESDD report. The risks are summarizedbelow:

Traffic and Road Safety – Sub-project activities are largely structural interventions categorized as Pilot Dredging and Open Excavation works. This would require transportation of construction material, equipment and machinery, instrumentation, parts and accessories to the dam. In addition, there will be movement of workers (direct and contract workers) to and from site. Transportation of man and material will increase traffic on the village roads during the period of construction leading to increased risk of accidents, spillages, noise and air emissions on generally deserted village roads. Keeping in view the nature of proposed rehabilitation work, only few vehicles will be added per day, therefore this activity does not pose any risk tocommunity.

Community Exposure to Health Issues – The sub-project activities will require contract workers – skilled and unskilled. It is expected that unskilled workers will be available locally; however, a small number of skilled workforce will come from outside the area and expected to stay at site. Influx of workers and setting up of temporary labour camp interfacing with community may increase the health risk of community. Migrant workers can be potential carriers of new infectious diseases not known in the area and impact the community health. Labour camp in vicinity of community may pose risk of unplanned waste and waste water discharge.

Management and Safety of Hazardous Material – Sub-project Pilot Dredging and Open Excavation interventions may require use of hazardous material in limited quantities such as fuels,flammable gases e.g., as acetylene and LPG, etc. Transportation, storage and handling of these hazardous materials requiring careful handling and disposal to minimize risk of public exposure.

2.4.3 HAZARD RISKMANAGEMENT

Following measures are proposed to minimize the community health and safety risks due to sub-project activities:

Traffic and Road Safety

- Transportation of loose construction material will be through covered vehiclesonly
- PUC for all transport vehicles will madecompulsory
- No large-scale movement of vehicles at nighttime
- Drivers will be issued instructions to follow signage and safetynorms

Community Exposure to Health Issues

- Health and hygiene requirement of the labour camp will be maintained though out the project cycle – potable water, power, community/individual kitchen, wastemanagement
- Separate toilets for male and female workers staying in labour camp connected to septic tanks/adequate waste collection and disposalarrangement
- Waste management system will be implemented in labour camp by providing adequate number of bins and collection system to avoid littering ofwaste
- Labour will be sensitized to follow good health and hygiene practices for their as well community's health

Incident Management, OHS monitoring, training:

Labour interaction with communities, Incident prevention and management, OHS monitoring, Health and Hygiene, training are discussed as part of labour management Plan ESS2.

2.4.4 COMMUNICATION AND CONSULTATION (WORKERS &COMMUNITY)

Stakeholder consultation was made at dam on 14/12/2022; It was attended by permanent staff of the generation staff, Dam staffs and local people. In addition, questionnaires were prepared and shared with stakeholders for submission of written response.

Following is the outcome of the stakeholder consultation:

1. All the participants welcomed the proposed interventions relating to dam safety and ensured that our DRIP work will not affect the villages duringexecution.
2. Agriculture is the main occupation of people in downstream of thedam.
3. There are no pending issues regarding dam construction relatedresettlement.
4. The participants explicitly mentioned that the dam is their lifeline and strengthening works will help their long-term livelihood and therefore welcomed suchinformation.
5. Participants have expressed that they do not have any grievances and as such no grievances were ever reported from theircommunities/ neighborhood's.
6. Water from Pillur Dam is passes through Kundah Hydro Power House 4, Pillur Reserve Forest and Pillur Dam water finally reach with Bhavanisagar reservoir. There are no stakeholders on downstream of the dam within 5Km.
7. Participants have requested necessary action to develop Tourism and fisheries in the dam area.

8. Participants also requested to take necessary action to rehabilitate the Un-occupied TNEB quarters which are now at damaged condition and rented. The income generated through tourism, fisheries and rent may be utilized for dammaintenance.
9. ParticipantswantedrenovationoftheapproachroadtoPillurdamfrommainroadwhich at present in very bad condition.

2.4.5 EMERGENCY MANAGEMENTPLAN

Emergency Management Plan should be displayed prominently at work site in local language for ease of understanding of workers and staff. It should contain following information:

1. Name, Designation & Contact Numbers of the site supervisor and alternate to be informed in case of anyemergency;
2. Contact details of nearby hospitals, fire department and policedepartment
3. Location of fire extinguishers, first aid boxes, emergency alarm and assemblypoints
4. Potential Emergencies Situations such as fire, fall, electric shock, etc. & response measures such as use of fire extinguishers, rescue procedures, switching off main power (can be madepictorially).

Responsibility of site supervisor (or his alternate in case he is not present) will be clearly defined including:

1. Assess the level ofemergency
2. Providing first aid/organize rescue, as per the emergencysituation
3. Assess the need for hospitalization and callambulance
4. Evacuate the area/limit entry after assessing type ofemergency
5. Assess emergency situation and its potential of expanding and inform IA and first responders, as required (fire, police andmedical)
6. Prepare accident report – root cause, corrective action and preventiveaction

2.4.6 EMERGENCY CONTROLCENTRE

Control room at dam serves as Emergency Control Centre, which has basic communication facilities. The same will be upgraded to serve as emergency control centre with following facilities:

- Display of the name of site emergency controller and all relevant phone numbers – project personnel, police, fire, medical, districtadministration
- Phone connection – landline/mobile (2 numbers)
- Site layout diagram with entry and exit routes / Assemblypoints
- Two numbers of first-aid boxes with prescribed first-aidmedicines

Table 1 – Stakeholder Engagement by Activities

- Two numbers ofblankets
- Drinkingwater
- Two numbers of rescueropes
- Two numbers of high beamtorches
- Fire extinguisher of DCP and CO_2type.

2.4.7 REFERENCE TO IFC ENVIRONMENTAL HEALTH AND SAFETYGUIDELINES

The IFC guidelines of environmental health and safety provide detailed guidance note on health and safety requirement and good practices. This manual shall guide contractor and IAs while finalizing site specific contractor's EHS managementplan.

2.5 STAKEHOLDER ENGAGEMENT PLAN (ESS10)

2.5.1 IDENTIFICATION OFSTAKEHOLDERS

Based on the current set of proposed interventions, the following potential stakeholders were identified and categorized as Affected Stakeholders, Other Interested Stakeholders, and Disadvantaged & VulnerableStakeholder.

i. **Affected Persons:** There are no affected persons who shall be directly or indirectly adversely affected by the proposedinterventions.

ii. **Other Interested persons**: In relation to structural interventions, these would be contractors, project management consultants, **regulatory bodies/institutional** stakeholders such as Pollution Control Board, Forest and Wildlife department or other environmental authorities, etc. In relation to non-structural interventions, these would be communities living downstream of dam who would be the key stakeholders during the implementation ofEAP.

iii. **Disadvantaged and Vulnerable Stakeholders**: Illiterate persons, physically challenged, women and elderly would be key stakeholders – requiring special focus and outreach to ensure that they are well informed about the provisions of theEAP.

2.5.2 STAKEHOLDERCONSULTATION

Stakeholder consultation was made at dam on 14/12/2022; It was attended by permanent staff of the generation staff, Dam staffs and local people. In addition, questionnaires were prepared and shared with stakeholders for submission of written response. Outcome of stakeholder's consultation is discussed at para 2.4.4 above.

2.5.3 STAKEHOLDER ENGAGEMENT AND PROJECTCYCLE

Table 1 lists the different types of information, relevant target audience depending on the nature of information, modes and frequency of engagement with these stakeholders.

Information to be disclosed	Target stakeholders	Tools of engagement & mode of disclosure	Frequency	Responsibility
Emergency Action Plans (preparation and implementation)	✓ DistrictAdministration, ✓ Revenuedepartment ✓ Police ✓ SDMA, DDMA,NDMA ✓ Print and electronic media ✓ Farmers,Communities (affected/ other interested) in thedam vicinity	✓ Consultative meetings and EAPDissemination workshop ✓ Website notifications ✓ SMSalerts ✓ Meetings to inform Village heads or community representatives	✓ Multiple	SPMU
Provisions related to Dam Safety	✓ Contractor ✓ SPMUstaff ✓ ForestDepartment ✓ Pollution controlBoard ✓ Farmers,Communities (affected/ other interested) in thedam vicinity	✓ Consultation meetings related ESDDs and ESMP ✓ Web disclosure of related ESDDs and ESMP	✓ Multiple ✓ Must before workstarts ✓ During implementation	SPMU
Work opportunities for Structural works	✓ Contractors ✓ Consultants	✓ Websitenotifications ✓ Tenderadvertisements innewspaper	✓ Multiple ✓ Continuous	SPMU
Work opportunities for ✓ Pettycontracts ✓ Labour	✓ Communities (including disadvantagedpersons) ✓ Pettycontractor	✓ Websitenotifications ✓ Meetings to inform Village heads or community representatives	✓ Multiple ✓ Continuous	SPMU and Contractor
GBV related provisions	✓ IAofficials ✓ Contractorpersonnel ✓ Consultantpersonnel	✓ Office circular and trainingevents ✓ Websitenotifications ✓ Bid documentsand Contract provisions	✓ Multiple ✓ Continuous	SPMU
Labour management procedure	✓ IAofficials ✓ Contractorpersonnel ✓ Consultantpersonnel	✓ Websitenotifications ✓ Bid documents and Contractprovisions	✓ Multiple ✓ Continuous	SPMU
Grievance mechanisms	✓ Communities (affected/ otherinterested) ✓ Contractors (for procurementrelated)	✓ Phone number or Toll-freeHelpline ✓ Display boards at site with GRMinformation ✓ Consultativemeetings ✓ Websitenotifications ✓ Meetings to inform Village heads or community representatives	✓ Continuous ✓ Multiple	SPMU

2.5.4 TIMELINES FOR INFORMATION DISCLOSURE ANDFEEDBACK

Information to be disclosed with timelines for providing feedback, responding to newspaper advertisements is presented below:

Table 2: Disclosure, feedback and timelines

Disclosure of information/documents	Mode of providing feedback	Timeline for feedback	Conveying of responses by SPMU	
			No. of days	Mode
ESMF, SEF	Email ID/website	-NA-		

Table 2: Disclosure, feedback and timelines				
Disclosure of information/documents	**Modeof providing feedback**	**Timeline for feedback**	**Conveying of responses by SPMU**	
			No. of days	**Mode**
Draft ESDDs/ESIAs; draft ESMPs	Email ID/website	30 days	Within 7 days of end of feedback period	Website notification
Executive Summaries in local languages of ESMP	Email ID/website	30 days	Within 7 days of end of feedback period	Website notification

2.5.5 MONITORING AND REPORTING

Quarterly progress reports of IA to include the following parameters

S. No.	Parameters	Status (Nos./description)
1	Number of consultation meetings conducted within a reporting period (e.g., monthly, quarterly, or annually);	
2	Number and types of IEC materials used	
3	Number of project events published/broadcasted in the local, regional media	
4	Type and frequency of public engagement activities;	
5	Number and type of grievances received within a reporting period (e.g., monthly, quarterly, or annually)and number of those resolved within the prescribed timeline	

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CHAPTER 3: ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN

3.1 PURPOSE OF ES MITIGATION MANAGEMENT ANDMONITORING

For the relevant environmental and social risks identified during the ESDD process of the Project, Management Plans are furnished in Chapter 2. This Chapter provides E&S risk/impacts mitigation and management plan, along with monitoring requirement, responsible entity for implementation of mitigation plan as well as monitoring. The mitigation measures are presented ESS wise at Table 3.1.

Table3.1 Environment and Social Mitigation and ManagementPlan

Activity and environmental aspects	Environmental and Social Risks/Impacts	Mitigation Measures	Stage of Action	Monitoring Requirements and Frequency	Responsibility of Implementation of Mitigation Measures	Monitoring Responsibility
Labour Camp (ESS 2)	Labour health, Hygiene, Drinking Water availability and Sanitary waste generation	Provide clean, hygienic and safe camp facilities for workers with provision of safe drinking water, separate canteen facility, first aid, periodic health check-up and waste management. Make Provision for adequate number of toilets separate for male and female, with arrangement of sewage collection and disposal	Before Construction	Physical Inspection by IA before construction and thereafter every 3 months or if any complaint is received whichever is earlier. Review of complaints should be done every month by IA.	Contractor	IA
	Water and Power requirement impacting other competitive users	Source of water and power for labour camp as per advisory from IA	Before Construction			
	Tree cutting by labour for cooking and space heating	Provision of community kitchen/kitchen fuel (LPG) for labour. Restriction of cutting any tree	Before Construction			
	Outside labour, may be bringing in new and infectious diseasesnot known to area	Pre deployment health check -up of labour (if workers are planned to stay at site for more than six months)	Before Construction	Review of records of health check-up before start of construction	Contractor	IA
	SEAH/GBV riskwithin as well as outsidethe	Training and awareness of workers, identification of GBV hotspots and	Entire duration of project	• Review of training records and identifiedGBV	Contractor; IA to establish GRM;	IA and SPMU for GRM

Activity and environmental aspects	Environmental and Social Risks/Impacts	Mitigation Measures	Stage of Action	Monitoring Requirements and Frequency	Responsibility of Implementation of Mitigation Measures	Monitoring Responsibility
	camp	monitoring, establishing GRM mechanism		hotspots and monitoring arrangement at start and every 3 months • Monthly Review of complaints received underGRM	GBV support	
Labour employment and working conditions (ESS 2)	1. Non-payment of wages and overtime 2. Non-compliance to working hours, number of working days per week, rest day and resttime 3. Inadequate facilities at site - drinking water, toilets,food 4. Not providing temporary accommodation for labour free of charge with separate toilet, bathing and lavatoryfacilities 5. Not providing kitchen and creche, if applicable 6. Employmentof child labour	Ensure compliance to BOCW and other applicable legal instruments; latest state government notification issued by Labour Department for minimum wages, working hours, child labour age should be complied with.	Before construction - Contractors Labour License, Insurance, ESI and PF registration Regular review during construction	Document review such as licenses, record register and muster roll; Physical inspection of working condition at site and labour camp; every 3 months or if any complaint is received whichever is earlier; Review of complaints received under GRM every month	Contractor	IA
Occupational Health and Safety during works	1. Unsafe working conditions – poor marking, instructions,	1. Contractor/Supervisor will inspect the work sites and mark them as high, moderate and low risk areas and ensure workers follow instruction to work in	Before construction – training and availability of	Review of training records, review of availability of PPEs, Review of accident records and corrective	Contractor	IA

Activity and environmental aspects	Environmental and Social Risks/Impacts	Mitigation Measures	Stage of Action	Monitoring Requirements and Frequency	Responsibility of Implementation of Mitigation Measures	Monitoring Responsibility
(ESS 2)	2. Not enough PPEs for all workers; PPEs not appropriate for all types of risks at site or Poor-qualityPPEs 3. Inadequate training and awareness of workers in use of PPEs and/or in emergency response,	these areas 2. Adequate number of good quality appropriate PPEs to be provided by contractor – helmets, gum boots,safety belts, safety harness, gloves, overalls, ear plugs, face masks,etc. 3. All workers should be provided with training on use of appropriate PPEs and how to respond duringemergency 4. Adequate EHS instructions shall be displayed atsite 5. Provision of First aid with availability of trained first aiders shall beensured 6. SOP shall be developed as per best practices and IFC EHS guidelinesfor unsafe conditions like working on height, working in confined areas, electrical safety, fall prevention, handling of hazardous material like weldinggases 7. Adequate provision of life jacketif working on reservoirside 8. Procedure of incident prevention, investigation and correctivepreventive action	PPEs During construction – marking of areas as per risks, rehearsing emergency response and identify training needs	preventive action reports – before start of construction thereafter every 3 months		
COVID 19 conditions	Global Pandemic seriously affecting the employment of labour and working conditions	Appointing a COVID-19 focal pointwith responsibility for monitoring and reporting on COVID-19 issues, and liaising with other relevantparties	Before start of mobilization of workers	First hand monitoring and review	Contractor and IA	Contractor and IA
Use of resources – water, power and raw material for dam	Resource wastage, impact on land environment while procuring material from quarry/borrow areas	Resource planning will be done by contractor in consultation with engineer in charge Estimate of material requirement from quarry/borrow area, identification of nearest locations with approval status.	Before start of construction work	Review of resource planning ensuring efficiency Review of quarry and borrow material requirement with approval status, validity and	Contractor with IA	IA and SPMU

Activity and environmental aspects	Environmental and Social Risks/Impacts	Mitigation Measures	Stage of Action	Monitoring Requirements and Frequency	Responsibility of Implementation of Mitigation Measures	Monitoring Responsibility
rehabilitation work (ESS 3)		Ensure that material is sourced from quarries or borrow areas which has valid environmental clearance.		environment clearance – once before start of construction		
Pollution generation from rehabilitation work sites and labour camp (ESS 3)	1. Air and noise emissions from storage and handling of raw material and during execution of civil and hydro-mechanicalwork 2. Water pollution from construction activities and from labourcamp 3. Debris generation from excavation work, if any, and debris generation from repairwork 4. Hazardous waste generation from civil construction work such as painting and hydro-mechanical work, replacement of parts,etc.	1. Ensuring covered storage of lose material/sprinkling of water tominimize fugitiveemissions 2. Maintaining construction equipment and ensuring DG set used for power have valid certificate of Type Approval and also valid certificates of Conformity of Production as per conformance labelling. DG stack height shall be as per the Consent to be obtained from State Pollution Control Board before start of work. 3. Ensuring use of dust masks, if workers are exposed to dust emissions and ear muffs for exposure to high noise for longdurations 4. Provision of mobile toilets at worksite 5. Wastewater from construction sites not to be discharged untreated(compliance with general dischargestandards) 6. construction debris to be disposed ofat pre-identified and approvedsite 7. Hazardous waste (Empty barrels/containers/linerscontaminated with hazardous chemicals /wastes; Contaminated cotton rags or other cleaning materials) to be separately stored and disposed of to authorized vendorsonly	During entire project duration	Ambient Air Quality and Noise Level: physical inspection to ensure dust emission/noise levels from rehabilitation work is not affecting the labour/community Water Quality: Monthly physical inspection to ensure wastewater from rehabilitation work is not being disposed of in river; debris is being disposed of at identified locations. Physical inspection of use of PPEs, review of DG specification, wastewater discharge, debris handling and disposal – every month Physical inspection of segregation, storage and disposal of hazardous waste to authorised vendor – every month	Contractor	IA
Transportation of material to project	Increase in the traffic on village roads leading to air and	1. All vehicles used by contractors for transportation of persons and material should have valid PUC	During entire duration of project	Physical inspection and review of documents before construction and thereafter	Contractor	IA

Activity and environmental aspects	**Environmental and Social Risks/Impacts**	**Mitigation Measures**	**Stage of Action**	**Monitoring Requirements and Frequency**	**Responsibility of Implementation of Mitigation Measures**	**Monitoring Responsibility**
site through village roads. (ESS 4)	noise emissions as well as risk of accidents.	2. Lose material should only be transported in covered vehicles		every 3 months or if any complaint is received whichever is earlier		
Stakeholder Engagement Plan (ESS 10)	stakeholder participation, implementing the grievance mechanism, ensuring continuous information transfer through open communication	Grievance mechanism EAP consultations, dissemination material, awareness sessions, print and electronic media campaigns	Early in the project Throughout the project across various activities		IA	IA

3.2 ES MITIGATION AND MONITORING PLAN – ACTION RESPONSIBILITYMATRIX

Various preparatory action and plans are to be prepared before start of construction work by contractor and Implementing Agency (Reference Chapter 2 and section 3.1) Table below lists actions to be taken by contractor andIA.

By Contractor		
Specific Action/ Preparation requirements	**Reference Document / Format**	**Stage of Action /Frequency**
Preparation of Labour Camp Plan(if labour camp are proposed)	Number of workers, number of units required, duration of stay; facilities proposed to be provided – toilets, kitchen drinking water, waste management	Once - Before start of work
Health check-up of workers (if workers are planned to stay at site for more than six months)	Health check records	Once - Before start of work
Training and awareness of labour – GBV/ SEA, Code of Conduct, OHS requirements	Topics covered, date of training and attendance	First before start of work, thereafter after every 3 months
Compliance to labour laws	Copy of Labour license, ESI, PF	First before start of work, thereafter as per expiry/renewal
Identification of hazardous working locations and marking and emergency response plan	List of risky activities	Before start of work
Availability of PPEs	List of PPEs – number of each type	Before start of work
Training of workers on use of PPEs and Emergency Response	Training records	First before start of work, thereafter after every 3 months
Identification of authorised vendor of hazardous waste	Name of the vendor, status of authorization and copy of authorization	Before start of work
Identification of approved quarry/borrow area	Name of the supplier, copy of approval	Before start of work
Submission of Quarterly Progress Report	QPR	Within 2 weeks of end of every 3 months period from start date

By Implementing Agency supported by EMC	
Specific Action/Preparation requirements	**Timeline/Frequency**
Identification of suitable location of labour camp, if applicable	Before start of work
Identification of source of water and power for labour camp, if applicable	Before start of work

Identification of GBV hotspots	Before start of work
Approval of quarry/borrow area	Within one week of submission of details by contractor
Identification of debris disposal location	Before start of work
Establishing GRM and its awareness - poster/signage with contact details	Before start of work
Ensuring effectiveness of GRM and review of complaints received	Every month during the entire duration of project implementation
Inspection of labour camp ensuring adequate facility	First on set up, thereafter every 3 months
Reviewing contractors' documents and ensuring compliance to labour laws	First on setup, thereafter every 3 months
Ascertaining adequacy of good quality PPEs	Once before start of work, thereafter every 3 months
Physical inspection at work site - air emissions, noisy operations, use of PPEs	Every month during the entire duration of work
Submission of Quarterly Progress Report	Within one month, from end of every 3 months period from start date

CHAPTER 4: IMPLEMENTATION ARRANGEMENTS AND ESMP BUDGET

The ESMP implementation is mainly the responsibility of Contractor engaged for the Works. Implementing Agency is responsible for Sub Project level activities not directly addressed by Contractor such as GBV referral mechanism, Stakeholder engagement etc. The EMC engaged by Implementing Agency will support the IA in implementation monitoring of ESMP.

In compliance with ESMF, the framework provisions of ESMP, which shall be implemented by Contractor will be included as part of Bids and the Contractor upon on boarding shall submit C-ESMP with updated inputs on management plans. The ESMP will be updated, should additional information/ impacts are determined during theproject.

4.1 IMPLEMENTATION AND SUPERVISIONARRANGEMENTS

Table below outlines the management measures and implementation and supervision arrangements for the various activities at different stages of the project.

S. No	Project Stage/Activity	Management Measures	Responsibility	
			Planning and Execution	**Supervision/ Monitoring**
1	Establishing Labour Camp before start of construction, if required	Provision of separate toilets for male and female, sanitation and waste collection & disposal facilities, provision of kitchen fuel/community kitchen	**Contractor**	**Engineer in Charge**
2	Health check of labour before induction(in case outside labour are proposed to employ and stay for more than six months)	Health from an authorised government hospital/dispensary and submission of record	Contractor	Engineer in Charge
3	Compliance to labour laws - before start of construction	Ensure compliance to BOCW and other applicable legal instruments including; latest state government notification issued by Labour Department for minimum wages, working hours, child labour age.	Contractor	Engineer in Charge
4	Identification of GBV hotspots and accident hotspots on transport route before start of construction	Physical survey and hotspot identification	E&S Expert at Dam	Engineer in Charge
5	Worker's training	Worker's training covering SEA/SEAH and GBV risks and consequences, OHS training and emergency actions, Code of	Contractor	Engineer in Charge

S. No	Project Stage/Activity	Management Measures	Responsibility	
			Planning and Execution	**Supervision/ Monitoring**
		Conduct – awareness and acceptance; biodiversity conservation		
6	Occupational Health and Safety of workers during entire duration of project	1. Contractor/Supervisor will inspect the work sites and identify the high-risk areas, if any; ensures workers follow instruction to work in theseareas 2. Adequate number of good quality appropriate PPEs to be provided by contractor – helmets, gum boots, safety belts, safety harness, gloves, overalls, ear plugs, face masks,etc. 3. All workers should be provided with training on use of appropriate PPEs and how to respondduring emergency	Contractor	Engineer in Charge
7	Resource planning before start of construction	1 Resource planning will be done by contractor in consultation with engineer in charge (requirement of water and power at various location for construction work and labour camp) 2 Estimate of material requirement from quarry/borrowarea, identification of nearest locations with approval status	Contractor	Engineer in Charge
8	Pollution prevention during entire project duration	1. Ensuring covered storage of lose material/sprinkling of water to minimize fugitiveemissions. 2. Maintaining construction equipment and ensuring DG set used for power have valid certificate of Type Approval and also valid certificates of Conformity of Production as per conformance labelling 3. Ensuring use of dust masks, if workers are exposed to dust emissions and ear muffs for exposure to high noise for long durations 4. Provision of mobile toilets at work site 5. Wastewater from construction sites not to be discharged untreated (compliance with general discharge standards) 6. construction debris to be disposed of at pre-identified andapproved site	Contractor	Engineer in Charge

S. No	Project Stage/Activity	Management Measures	Responsibility	
			Planning and Execution	**Supervision/ Monitoring**
		7. Hazardous waste (Empty barrels/containers/liners contaminated with hazardous chemicals /wastes; Contaminated cotton rags or other cleaning materials) to be separately stored and disposed of toauthorized vendors only		
9	Safe transportation of man and material during entire duration of project	1. All vehicles used by contractors for transportation of persons and material should have validPUC 2. Lose material should only be transported in coveredvehicles	Contractor	Engineer in Charge
10	EHS monitoring	To be undertaken throughout the project implementation period with inspection by E& S staff of contractor	E&S experts of contractor	IA

Reporting by contractor and monitoring by SPMU

Contractor will prepare a Quarterly Progress report (QPR) and submit to E&S Experts/SPMU giving the compliance of ESMP. Details will include status on:

1. Progress on ESMP implementation workplan.
2. Status of Compliance with E&S statutory requirements such as labour licenses, insurance, etc.
3. ESHS incidents &supervision.
4. Usage (no. required, distributed and used) of Personal Protective Equipment (PPE) such as hard hats, safety shoes and safety vests byworkers.
5. Safety at work sites like COVID incidents, providing traffic signage, barriers/delineator, management of traffic, drainage and pliable road surfaceetc.
6. Training conducted, and worker's participation (submit reports with statistics of training and worker'sparticipation).
7. Functioning of GRM relating to labour aspects, including summary details of Workers grievances, ifany.
8. Community grievances, ifany.
9. Corrective Actions and planned E&S activities for nextquarter.

SPMU will prepare its quarterly monitoring report and submit the same along with contractors report toCPMU.

ANNEXURE 1: OUTLINE OF CONTRACTOR'S ESMP

(Will cover all on site issues and responsibility with management)

1. Sub-project activities description under Contractor'sScope

2. LicensingRequirement

2.1 LabourLicense
2.2 Insurance
2.3 Use of approved quarry/borrow areas, if such material isrequired
2.4 Any other

3. Workforce management under COVID 19 considerations, ifapplicable

3.1. Profile of work force – work activities, schedule, contract duration, workforce rotation plan, workers place of stay, workers with underlying healthissues
3.2. Measures to mitigate risks on account of COVID19
3.3. Contingency plan covering – pre-health checkup, access restrictions, hygiene, waste management, accommodation arrangements, PPE provision andusage
3.4. Reporting and handling of Instances of COVID 19 cases, training and communication with workers, training and SOPs on communicating and contact withcommunity

4. Labour Camp (if outside labour is accommodated in a labourcamp)

4.1. Location of LabourCamp
4.2. Number of labour to be housed andduration
4.3. Break-up of labour workforce – male, female,children
4.4. Number of Units in LabourCamp
4.5. Source and Provision of Water and Power Connection including DrinkingWater
4.6. Cooking Arrangement – Individual Kitchen/communityKitchen
4.7. Source, Type and Provision of KitchenFuel
4.8. Toilet facilities – individual/community; fixed/mobile and sewage disposal arrangement
4.9. Waste collection and disposalarrangement
4.10. Identify Risk of Community Interface – any fencing/separationrequirement
4.11. Security and general lightingarrangement

5. ResourcePlanning

5.1. Water and power requirement for works andlocations
5.2. Need for water line or electricalwiring
5.3. Raw material requirement andsource(s)
5.4. Temporary storage(s) at site and location(s) –cover/uncovered
5.5. Transportation route from source tostorage

6. PollutionPrevention

6.1. Potential of dust emission from openly stored raw material and mitigation arrangement – covering, sprinkling,etc.

6.2. Potential of water pollution from spillage and leakage from raw material storage and preventivemeasures

6.3. Potential of air emissions from works including toxic emissions from paints and chemicals, emissions from DG sets and other construction equipment – locations where potential is high, possibility of community impact, impact on workers, preventive measures such as dust masks for workers,etc.

6.4. Potential of noise generation from works (use of equipment and machinery, demolition work) including from any activity planned at nigh time – locations where potential is high, possibility of community impact, impact on workers, preventive measures such as ear muffs,etc.

6.5. Potential of water pollution from works – possibility of leakage to surface water or accumulation in low lying areas; preventive measures/treatment requirement

6.6. Estimate of excavated earth/construction debris requiring disposal – quantum, sources(s) of generation, identified dumping sites, transportation mode and route, period of dumping and restorationplan

7. Occupation Health & Safety and EmergencyManagement

7.1. PPE requirement andnumbers

7.2. Lists of tasks and work zone critical for hazard prevention, ifany

7.3. Location of warning signage for hazardprevention

7.4. Requirement of first aid boxes and portable fireextinguishers

7.5. Key person(s) to be contacted duringemergency

7.6. Protocol for deciding the level of emergency – need for hospitalization, information to authorities,etc.

7.7. Process of accident analysis, corrective and preventive measures and need for reporting

8. Addressing GBVRisks

8.1 Preventive measures – provision of lighting, separate toilet areas for men and women, increased vigil and security arrangement for community sensitive GBV hotspots, if identified by damauthorities.

8.2 Sensitizing and awareness of labour on GBV issues including penalties and legal action againstoffenders

8.3 Awareness aboutGRM

9. Code ofConduct

9.1 Preparation of Code ofconduct

9.2 Making labour aware of conduct with all the provisions, do's and don'ts, penalties for non-compliances,etc.

9.3 Displaying CoC at prominentlocations

9.4 Signing of CoC byworkers

10. Awareness andTraining

10.1 Plan for training and awareness covering Pollution Prevention, OHS, Use of PPEs, Accident reporting and emergency management, CoC, GBV, GRM,etc.

10.2 Trainingschedule

10.3 Trainingrecords