DAM REHABILITATION AND IMPROVEMENT PROJECT (DRIP)
Phase II and Phase III

(Funded by World Bank)

SAPAN MEDIUM PROJECT

ENVIRONMENT AND SOCIAL DUE DILIGENCE REPORT

JUNE 2020

Office of Chief Engineer
Water Resources Department
Amravati Region
Maharashtra
E-mail: ceamt2009@gmail.com

CONTENTS

List of Tables

List of Figures

List of Annexures

ABBREVIATIONS AND ACRONYMS

AIDS	:	Acquired Immune deficiency Syndrome
CA	:	Conservation Area
CCA	:	Culturable Command Area
CDSO	:	Central Dam Safety Organization
CE	:	Chief Engineer's
COVID	:	Coronavirus Disease
CPMU	:	Central Project Management Unit
CWC	:	Central Water Commission
DE	:	Beyond Dam Area
DHARMA	:	Dam Health and Rehabilitation Monitoring Application
DI	:	With in Dam Area
DRIP	:	Dam Rehabilitation and Improvement Project
DSRP	:	Dam Safety Review Panel
E&S	:	Environment & Social
EAP	:	Emergency Action Plan
ESCP	:	Environmental and Social Commitment Plan
ESDD	:	Environmental and Social Due Diligence
ESF	:	Environmental and Social Framework
ESIA	:	Environmental and Social Impact Assessment
ESMF	:	Environment and Social Management Framework
ESMP	:	Environment and Social Management Plan
ESS	:	Environmental and Social Standard
ESZ	:	Eco-Sensitive Zones
GBV	:	Gender Based Violence
GCA	:	Gross Command Area
GIS	:	Geographic Information System
GOS	:	Gate Operation System
GRM	:	Grievance Redressal Mechanism
HIV	:	Human Immune deficiency Virus
IA	:	Implementation Agency
IPF	:	Investment Project Financing
LMP	:	Labour Management Procedure
MCM	:	Million Cubic Meters
MDDL	:	Minimum Draw down Level
MIS	:	Management Information System
MMP	:	Muck Management Plan
MU	:	Million Units
MW	:	Megawatt
MWL	:	Maximum Water Level
OHS	:	Occupational Health & Safety
OHSP	:	Occupational Health & Safety Management Plan
PA	:	Protected Area
PAP	:	Project Affected Person
PDO	:	Project Development Objective

PE	:	Physical Environment
PMC	:	Project Management Consultancy
PPE	:	Personal Protective Equipment
PST	:	Project Screening Template
RCP	:	Resource Conservation Plan
RD	:	Rural Development
RET	:	Rare Endangered and Threatened
RFB	:	Request for Bids
RL	:	Reduced Level
ROS	:	Reservoir Operation System
SC	:	Scheduled Castes
SCADA	:	Supervisory Control and Data Acquisition
SDSO	:	State Dam Safety Organisation
SEA	:	Sexual Exploitation and Abuse
SEAH	:	Sexual Exploitation Abuse and Harassment
SEP	:	Stakeholder Engagement Plan
SF	:	Screening Format
SH	:	Sexual Harassment
SH	:	State Highway
SPMU	:	State Project Management Unit
ST	:	Scheduled Tribes
VPD	:	Vertical Porous Drain
WB	:	World Bank
WCD	:	Water Conservation Department
WQ	:	Water Quality
WRD	:	Water Resources Department

Chapter 1 INTRODUCTION

1.1 PROJECT OVERVIEW

The Dam Rehabilitation and Improvement Project Phase II and Phase III (DRIP Phase II & Phase III) initiated by Ministry of Jal Shakti through Central Water Commission, with an objective to cover more States and more dams (after DRIP Phase I) across India to improve the safety and operational performance of these selected dams. This new Scheme will further strengthen the efforts of Government of India beyond Ongoing DRIP Phase I. The project would continue to finance structural improvements along with dam safety institutional strengthening which shall break with the prevailing build-neglect-rebuild approach by giving greater emphasis to establishing innovative financing mechanism for regular O&M and dam rehabilitation, enhancing State capabilities to manage these critical assets through institutional strengthening, and introducing risk-informed dam safety management. The project development objective (PDO) is to increase the safety of selected dams and to strengthen institutional capacity for dam safety in participating States. The project components are as follows:

Component 1: *Rehabilitation and Improvement of Dams and Associated Appurtenances*, focusing on structural and non-structural measures at selected project dams. The proposed interventions will include, but not be limited to, around 35-40 kind of rehabilitation activities as done in ongoing DRIP. In addition, all important non-structural activities will also be taken up. In addition to these interventions, the project will require each rehabilitated dam to have basic instrumentation and could also support the development of additional systems to detect and respond to risks promptly, such as flood forecasting systems, early warning systems, data management and analysis software, an
d standardized dam safety instrumentation (i.e., Supervisory Control and Data Acquisition [SCADA]).

Component 2: *Dam Safety Institutional Strengthening,* focusing on regulatory and technical frameworks for dam safety assurance. The activities to be carried out will include, but not be limited to, targeted training nationally and internationally to all partner agencies, development of Management Information Systems (MIS) and other programs to capture and analyze data for long-term planning and guiding of dam operations; support to the further development within CWC of the Dam Health and Rehabilitation Monitoring Application (DHARMA) program, support to the revision of existing guidelines on dam safety and preparation of new guidelines, as needed; rapid risk screening of dams, stakeholders consultation meetings for dissemination of prepared emergency action plans, updation of seismic hazard mapping of country, capacity building of academic and central institutions, public outreach programs, construction supervision & quality assurance activities etc.

Component 3: *Incidental Revenue Generation for sustainable operation and maintenance of dams;* in order to ensure long term sustainability of operations & maintenance of existing dams, it is proposed to encourage the dam owners to explore the incidental revenue generation through

innovative ideas i.e. Development of tourism, fisheries, secondary sources of power generation (hydel as well as solar), water recreation activities etc. and divert some part of this generated revenue for O&M of a given dam. Few pilot dams can be selected to experiment this innovation.

Component 4: *Project Management;*the overall responsibility for project oversight and coordination will rest with the CDSO of CWC. This Organisation will act as the Central Project Management Unit (CPMU). The CPMU will be assisted by a management and engineering consulting firm. Each state and other agency will establish a Project Management Unit (SPMU) attached to the Chief Engineer's (CE) office in charge of the SDSO or any such similar arrangement in power utilities. This Unit will have direct responsibility for the coordination and management of the project at state level.

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. The Project will be taken up in 19 states covering 300 dams.

1.2 SUB-PROJECT DESCRIPTION – SAPAN RIVER PROJECT

Sapan River project contemplated construction of an Earthen Dam across the Sapan River just U/s of village wazzar in AchalpurTahsil of Amravati District. Sapan River is a right bank tributary of Purna River in Tapi basin.

Amravati District, particularly the Purna basin is having deposits of rich soils. At present, orange,cotton and chillies are the major crops grown in this region. To increase the production of the crops various Irrigation projects are being investigated. Sapan River Project is one of these projects.

Sapan River project envisages construction of an earthen dam 995 M in length with a maximum height of 55.27 M. Dam line is proposed to pass a peak discharge of 2289.01 cumecs.

There will be a left bank canal of 10.90 Kms. In length to irrigate an area of 6134 ha with crop area of 6380 ha including follow on crops in the AchalpurTahsil of Amravati District. 6.971 MM3 of water is reserved for drinking water purpose.

Salient features of the project area are reported below:

Sr.No.	Item	Description
1	Name of the Project	Sapan River Project
2	Taluka	Achalpur
3	District	Amravati
4	**Location of site** i) Toposheet No. ii) Latitude iii) Longitude	U/s of village Wazar 55G/,55G/8,55G/11,55G/12 21°22'0'' 77°28'0''
5	**River Basin** i) Name of the River ii) Sub-Basin iii) Basin	 Sapan River Purna River Tapi Basin
6	Catchment Area	115.00 Sq.Km
7	Average Annual Rainfall	840 mm
8	**Storage Capacity:-** Gross Storage Upto FRL Live Storage	 39.26 Mm3 38.60 Mm3
9	**Controlling Levels:-** a) River Bed Level b) M.D.D.L. c) Ogee Crest Level d) F.R.L. e) M.W.L. f) T.B.L.	 461.73 m 477.80 m 506.50 m 514.50 m 514.50 m 517.00 m
10	**Spillway:-** a) Type of Spillway b) Size of Gates	 Gated Ogee (4 Nos) 12m x 8m

	d) Discharging Length e) Maximum flood discharge	57.00M. 2289 Cumecs
11	Submergence:- a) Total Area Under Submergence	250 Ha.

Proposed Interventions/ Activities and intended Outcomes

Dam Safety Review Panel (DSRP) constituted by CWC, Government of India has inspected and made a review ofSapan dam on 7th January, 2020 and recommended measures to improve the safety and performance of dam and associated appurtenances in a sustainable manner, and also to strengthen the dam safety institutional set-up.

The objectives of the project are to be achieved through investments for physical and technological improvement activities, managerial upgrading of dam operations, management and maintenance, with accompanying institutional reforms. The project will improve the safety and operational performance of dam and mitigate risks to ensure safety of downstream population and property. The following rehabilitation proposals as described in the PST have been formulated based on the DSRP recommendations and these proposals form the basis for preparation of present ESDD report.

Structural Rehabilitation Works

1. Drilling and Grouting work of sapan Dam body for reducing leakages
2. Dewatering of Stilling Basin
3. Maintenance of Earthen dam for Dam section tobe restore As per Design.
4. Cleaning of VPD For measure actual true Leakage through dam gallery.
5. Repairs/ replacement of gates rubber seal & hoists.

Non-structural Measures

1. Revision of Reservoir Operation Parameters GOS & ROS (needs to be updated after every five year)
2. Preparation of Emergency Action Plan (EAP)
3. Setting up dam instrumentation As per Recommendations.

4. Real-time Inflow Forecasting System - Automation system required for forecasting of inflow.

Instrumentation, SCADA, Surveillance system, etc

5. Dam Instrumentation (Geo-technical, hydro-meteorological, Seismic, Geodetic, data collection, storage, data transfer, analysis, retrieval, Operation &Maintenance etc.).

Basic Facilities Enhancement

6. Construction of Inspection room , Instrumentation rooman and watchman room at Sapan Dam.
7. Construction of approach cement concrete road tosapandam top.
8. Electrical works.
9. Mechanical works.

Tourism/Fisheries/Hydropower Development

Nil

- *Present ESDD is based on the activities proposed in PST, if there is any change of activities in future, ESDD will be updated accordingly.*

Figures 1.1 and 1.2 provide photographs of key infrastructure proposed for rehabilitation works and also major interventions locations.

Figure 1.1: Selected Photographs of Improvement/Intervention area

Approach Road to Dam Top

Figure 1.2: Project Area showing major intervention location

1.3 IMPLEMENTATION ARRANGEMENT AND SCHEDULE

As can be seen from the list of activities proposed under dam rehabilitation project; these activities can be divided into civil works main package, other package and instrumentation. Civil work will be carried out by contractor(s) as these are labour intensive activities and would be completed over a period of 3 years. SPMU will hire contractor(s) based on national open competitive procurement using a RequestforBids(RFB)asspecifiedinthe WorldBank's–ProcurementRegulationsfor IPFBorrowers,July 2016, (RevisedAugust2018Procurement Regulations),andis open toallBiddersasdefinedintheProcurementRegulations. Following is the overall implementation and procurement schedule:

a)Overall Phasing of Project Implementation:
Proposed Starting of implementation (MM/DD/YYYY): 01/06/2020
Proposed Ending of implementation (MM/DD/YYYY): 31/05/2023
Implementation Duration (months) (MM): 3 years

b)Timeline phasing of implementation:

Sl. No.	Description	From (month/year)	To (month/year)	Status of Procurement Process
1	Civil Works – main package	November -2020	may -2023	Estimate Sanctioned
2	Other Packages	November -2020	may -2023	Estimate Sanctioned
3	Procurement – instrumentation, goods, inspection vehicles	Yet to be decided		

1.4 PURPOSE OF ESDD

The overall project (DRIP II) was categorized as **Low Risk** as per the internal Environment and Social Risk Classification of the Bank. The Environment and Social Due Diligence has been conducted to use it as a tool for decision-making on the sub-project with the following specific objectives:

i. To identify, evaluate and manage the environment and social risks and impacts of the sub-project in a manner consistent with the ESSs;
ii. To adopt a mitigation hierarchy approach to the project's E&S risks i.e. a) anticipate and avoid risks and impacts; b) minimize or reduce risks and impacts to acceptable levels, if not avoidable; c) once risks and impacts have been minimized or reduced, mitigate; and (d) where significant residual impacts remain, compensate for or offset them, where technically and financially feasible;

iii. To help identify differentiated impacts on the disadvantaged or vulnerable, if any, and to identify differentiated measures to mitigate such impacts, wherever applicable;

iv. To assess the relevance and applicability of environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate; identify gaps, if any exist, and

v. To assess borrower's existing capacity, gaps therein, and identify areas for enhanced capacity towards management of E&S risks.

vi. Based on the categorization of Environment and Social risks and impacts of the Dam sub-project, to determine whether ESIA is to be carried out using independent third- party agency or a generic ESMP customized to mitigate E&S risks and impacts will suffice.

1.5 APPROACH AND METHODOLOGY OF ESDD

The following approach has been adopted for ESDD:

i. Study sub-project information, proposed interventions, their magnitude and locations and carry out assessment of each proposed intervention to identify the magnitude of E&S risk and impacts;

ii. Review relevance and applicability of national and state legal requirements and Bank's ESF policy, standards and directives and preliminary assessment of applicability of legal requirement and ESS framework (2-8).

iii. Conduct site visit to understand baseline environment and social settings, proposed activities under the sub-project, their location and sensitivity, if any.

iv. present key baseline data essential for impact assessment in immediate vicinity area of proposed interventions from secondary sources, such as land-use, protected areas in vicinity, ascertain presence of indigenous (schedule tribe)/vulnerable people, etc.

v. Undertake institutional assessment to identify existing capacities & relevant gaps to manage E&S risks and impacts.

vi. Conduct preliminary stakeholder consultations to help identify potential stakeholders; to provide information on the proposed interventions; to identify issues and concerns; and ascertain appropriate mechanisms for continued engagement.

vii. Carry out activity wise environment and social screening and identify risks and impacts. Classify the sub-project based on risk level (low, moderate or substantial and high) and recommend commensurate plans/measures to meet identified risks and impacts.

Chapter 2 INSTITUTIONAL FRAMEWORK AND CAPACITY ASSESSMENT OF IA

2.1 POLICY AND LEGAL FRAMEWORK

India has well defined environmental and social regulatory framework. The regulation applicability depends on nature of work and location of work. Broadly legislation can be divided into four categories viz environmental, forests, wildlife conservation and social. The applicability analysis of regulations pertaining to all the above four categories was carried out. The applicability of World Bank ESF comprising, 10 ESSs (ESS1 to ESS10) to the proposed rehabilitation proposals and Standard specific requirements were analyzed. Further, a comparison of national environmental and social regulations versus World Bank's ESS has been carried out along with the gap analysis. Applicability of Indian regulations, World Bank's ESS along with comparison and gap analysis is discussed in ESMF.

Central Water Commission, Ministry of Jal Shakti, Government of India has prepared "Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects" and is under publication as a guiding document for the dam owners to systematically address in advance the environmental safeguard requirements and have discussed in detail all applicable legal requirement. Reference has been drawn from this document as well, while carrying out applicability analysis.

Indian environmental regulation requiring environment clearance is for new dam projects specifically for the purpose of hydropower generation and/or irrigation projects and varies with generation capacity for hydropower projects and culturable command area served by irrigation projects. Forest related clearances become applicable, if new or any modification in any existing project requires diversion of forest land for non-forestry purposes. Wildlife Clearance process gets triggered if the project is in proximity to protected area or activities are proposed within protected or conservation areas.

Therefore, for the proposed dam rehabilitation activities at Sapan River Project, regulatory clearances will not be applicable as per Indian regulation. Other applicable regulatory requirement is discussed in ESMF.

2.2 DESCRIPTION OF INSTITUTIONAL FRAMEWORK

The sub-project will be implemented by Water Resources Department,Amravati. Maharashtra. The geographical area of the state is divided into 5 river basins viz. Krishna, Godavari, Tapi, Narmada and narrow basin of west flowing rivers of Konkan.

Water Resources Department Amravati, Maharashtra, who will be responsible for implementing the project, is headed by Executive Director with Principal Secretary being the overall head of Water Resources Development.

The planning & development of irrigation facilities in the State is entrusted with Water Resources Department (WRD) and Rural Development & Water Conservation Department (RD & WCD). WRD is entrusted with survey, planning & design, construction & management of major, medium and minor projects having Cultural Command Area (CCA) 250 ha and more. Whereas, survey, planning, construction & management etc. of minor projects below 250 ha. CCA is entrusted to RD & WCD.

WRD Maharashtra does not have in-house expertise to address E&S issues. Presently, Project Director at SPMU and Executive Engineer at dam level look after these aspects.

Presently, no formal system is established for dealing with external complaint or a formal GRM exclusively at Water Resources Department, Maharashtra. Though, there is a Grievance Redressal Portal of Government of Maharashtra (https://grievances.maharashtra.gov.in/en) which provides the details (contacts/email) of nodal officer and Head of Water Resources Department under Officer's contact. There is no internal complaint committee as per Sexual Harassment Act either at dam level; however, such complaints can be made to the head of the department.

Chapter

3

ASSESSMENT OF ENVIRONMENTAL AND SOCIAL CONDITIONS

Assessment of physical, ecological and socio-economic conditions at dam site and immediate surrounding has been carried out based on secondary information and site observations; as discussed below.

3.1 PHYSICAL ENVIRONMENT

Land Use/ Land Cover

The project surrounding area land use and environmental sensitivity was analysed using GIS techniques. Land use/ land cover map within 5 km radius of dam is presented at **Figure 3.1**. As can be seen from the map, present land use upstream of dam is waterbody (reservoir), on downstream side along both the banks there are agricultural area, evergreen/semi-evergreen forests and scrub land. However, as discussed under Chapter 1 about project description, the project activities will be confined to dam body only and no structural interventions are proposed beyond existing dam boundaries. Six villages are falling in 5 km radius on downstream of dam namely – Jaitadehi,Vazzar,Malhara,Kalvit,Narsari&Gaurkheda.

Google Map
Sapan Medium Project
Tq. Achalpur Dist. Amravati

Figure 3.1: Land Use and Land Cover Map of 5 Km radius around Dam site

Natural Hazards

Potential of natural hazards such as flooding and earthquake is not significant. Spillway capacity of the project at MWL is 2289.01cumec (P.M.F. as per old flood review is 1409.09 cumecs) while the revised design flood has been worked as 2588cumec (Latest flood review by CWC) which is. Project falls in earthquake zone III, there is no revision and dam design has taken care of this aspect as well. Z*ones, viz. Zone II, III, IV and V. Zone II is the least active and Zone V is the most active.*

3.2 PROTECTED AREA

Nearest Protected Area

No protected area or eco sensitive zone near dam. No permission or clearance would be Required to carry out any of the proposed rehabilitation work at Sapan River Project.

3.3 SOCIAL ENVIRONMENT

The Sapan River Project is located at village Vazzer in AchalpurTaluka (Tehsil) of district Amravati in the state of Maharashtra. The proximity villages/urban areas i.e. villages/urban areas which fall within 5 km distance from dam on downstream side, these are Jaitadehi,Vazzar,Malhara,Kalvit,Narsari,Gaurkheda(kumbhi). Submergence of dam is 250Ha. Spread in Amravati, district. The project area does not fall within the Schedule V[1]areas of Maharashtra.

The brief demographic characteristic of the **Amravati** district is given in the table below:

No. of Households	**644,922**	**Household Size**	**04**
Total Population	**2,888,445**	**Population (0-6 age)**	**313457**
Male	1,480768	Boys (0-6 age)	162011
Female	1,407,677	Girls (0-6 age)	151446
Sex Ratio	951	Sex Ratio (0-6)	934
Population (SC)	**506,374 (17.53%)**	**Population (ST)**	**404,128 (13.99%)**
Male	259,398	Male	205,834
Female	246,976	Female	198,294
Literates	**8,227,161**	**Literacy Rate (in %)**	**87.38**
Male	4,591,396	Male	**91.46**
Female	3,635,765	Female	**83.10**
No. of Workers	**1,236,322**	**Cultivators**	198,793 (16.08%)
Male	837,577	**Agricultural Labours**	667,943 (54.03%)
Female	398745	**Household Industrial Workers**	20998 (1.70%)
No. of Main Workers	**1,061,544**	**Other Workers**	348,588 (28.20%)
No. of Marginal Workers	**174,778**		

[1]**Scheduled Areas** are **areas** in India with a preponderance of tribal population subject to a special governance mechanism wherein the central government plays a direct role in safeguarding cultural and economic interests of **scheduled** tribes in the **Area.**

The project area does not fall within the Schedule V areas of the state. Though there are Scheduled Tribe households in the downstream areas, there are no physical interventions planned in the downstream areas. The ST households are mainstreamed in the area and do not possess any characteristics as outlined in ESS7. These areas and the ST households will be taken into account during the preparation of Emergency Action Plan for Sapan River Project.

3.4 CULTURAL ENVIRONMENT

As per list of National Monuments in Maharashtra and list of State Protected monuments in Maharashtra; there are no protected monuments in and around dam site i.e. within 10 km radius of dam site.

Chapter 4 ACTIVITY WISE ENVIRONMENT & SOCIAL SCREENING, RISK AND IMPACTS IDENTIFICATION

4.1 SUB-PROJECT SCREENING

The subproject screening was undertaken following a set methodology. Process of risk /impacts identification was done using two step Screening process. Step I identifies the applicable sub-project activities, preconstruction and construction stage's major auxiliary or interventions related risks and impacts within the impact zone. Step II conducts an analysis of extent of risk viz. low, moderate, substantial and high associated with various sub activities related to each activity that was identified through Step I. All these were then summarized to arrive at overall dam sub-project risk category. Description of each step of screening as per formats, and the outcome of each step is given below.

Step I Screening (using Form SF-1): Sub-Project Component, Construction Support Preparatory Intervention related vs Nature of risk/impact

Scoping exercise was carried out to select the applicability of each activity based on the interventions proposed in the sub-project PST. Applicable interventions were further classified based on the location i.e. within dam area or outside the dam area and for each applicable intervention likely nature of risks and impacts has been listed.

Screening indicated that all project components related activities are limited to within the dam area/premises. Due to nature of these activities, likely impacts will be on physical environment in terms of air pollution, noise pollution and waste generation. None of the proposed structural interventions involve acquisition of private land and/or private assets. These activities in no way cause restriction on access to land or use of resources by local communities and there is no economic displacement envisaged due to the sub-project. Activities interfacing with water bodies – river/reservoir will have risk of spillage of chemicals, construction material, and debris leading to water pollution and impacts on fishes.

Pre-construction and construction stage major auxiliary or preparatory intervention are within dam area as well as beyond dam area. Deployment and haulage of heavy machinery, setting up of workshop, operation of concrete mixture and heavy pumps will be within dam area. Other activities such as labour camp and debris disposal will be beyond dam area. Activities involving machinery and equipment will have OHS risks and

impacts on physical environment. Transportation of material, debris disposal and labour camp are likely to generate pollution and impact on physical environment.

Project will involve project managers and supervisors, contracted workers – these would also include migrant workers as all the required labour will not be fully supplied locally for a number of reasons, such as worker unavailability and lack of technical skills and capacity. Construction contractors are expected to stay at/near dam, set up construction equipment and machinery near work location at pre-determined/approved sites. Influx of skilled migrant labour, albeit few in numbers, for construction works is likely. The labour will stay inside the dam premises, hence risk of SEA/SH is low.

Proposed non-structural interventions include Emergency Action Plan, Early Warning System and Flood Forecasting System, etc. In case of these interventions relating to early flood warning systems having siren systems, broadcasting facilities and Emergency Action Plans, project will reach out to the disadvantaged and vulnerable persons and groups and involve them mainly during implementation. During preparation of EAP, dam break scenario will be simulated and inundation map prepared to delineate the potential risk area in case of an emergency situation. Similarly, during flood release scenario by gate opening, area inundated will be delineated by simulation. Population in vulnerable areas under different release scenario will be identified and contacted through public consultation meetings. Communities will be made aware about the warning systems and do's and don'ts during such scenarios.

Output of this screeningis enclosed as **Annexure I**.

Step II Screening (using Form SF-2): All applicable activities identified as having potential risks/impacts that were identified through Step I screening, are further screened for associated sub-activity and evaluated for the extent of risk. Sub-activity's Risk/Impact intensity is further categorised as Low (L), Moderate (M), Substantial (S) or High (H) based on following criteria:

Low:	Localized, temporary and negligible
Moderate:	Temporary, or short term and reversible under control
Substantial:	Medium term, covering larger impact zone, partially reversible
High:	Significant, non- reversible, long term and can only be contained/compensated

Occupational Health and safety is treated as Moderate by default as its risk effect can be managed by adopting defined guidelines.

Analysis of extent of risk/impact for sub-activities resulted in identification of following activities as having Moderate Risk/impact.

.

- Cleaning of V.P.D. pipes in gallery.
- Dewatering & cleaning of stilling basin for inspection.
- Turfing of earthen dam.
- Construction of approach road at dam top of sapan medium project.
- Construction of instrumentationroom ,inspection room and watchman atsapan dam.
- Providing, installation & commissioning of instruments.
- Maintainance of Earthen dam.
- Mechanical Works.
- Electrical works.

All other activities are categorized as low risk activities. None of the activities for this sub-project is having substantial or high risk. The outcome of Screening is enclosed as **Annexure II**. In case of GBV/SEAH, this site was assessed as Low risk.

Based on consideration of all the above, summary of Risk/Impact (as per outcome of SF-2) is summarized for major sub-project activities under **Table 4.1 below.**

Table 4.1: Summary of Identified Risks/Impacts inForm SF 3

Project Activity	Environment Risks						Social Risks					
	Air, water, noise, land use, Soil, Resource use	**Pollution downstream and upstream**	**General Ecology**	**Protected Area (Wild Life Sanctuaries, National Park and other natural habitat even if not protected)**	**Other RET species (flora and fauna) outside protected areas**	**Fish and Aquatic life within dam water body**	**Land**	**Tribal**	**Labour**	**Cultural heritage**	**GBV/SEAH**	**OH and Safety to Labour/ Community**
Civil (within Dam Boundary)	M	L	L	None	None	L	L	L	L	L	L	M
Electro Mechanical	L	L	L	None	None	L	L	L	L	L	L	M
Instrumental SCADA, surveillance	M	L	L	None	None	L	L	L	L	L	L	L
Road work	M	L	L	None	None	L	L	L	M	L	L	M
Safety measures (Siren, Lighting)	M	L	L	None	None	L	L	L	L	L	L	L
Major debris disposal	L	L	L	None	None	L	L	L	L	L	L	L
Labour camps	L	L	L	None	None	L	L	L	M	L	L	L

Criteria for Risk Evaluation:

Low: Localized, temporary and Negligible

Moderate: temporary, or short term and reversible under control

Substantial: medium term, covering larger impact zone, partially reversible

High: significant, non- reversible, long term and can only be contained/compensated

Occupational Health and safety: it will be treated as Moderate by default as OHS effect can be kept controlled and with negligible effect with adoption of defined guidelines,

4.2 STAKEHOLDERS CONSULTATION

In light of the COVID 19 pandemic, Government of India has announced a country wide lockdown between March 23 till May 17, 2020, that constrained holding of consultation meetings; therefore stakeholder consultations could not be carried out. As soon as the lock down is lifted, stakeholder consultations will be organized and report updated.

4.3 DESCRIPTIVE SUMMARY OF RISKS AND IMPACTS BASED ON SCREENING

Based on the above screening analysis, potential impacts and risks from the sub-project are summarized below:

Environmental Impacts and Risks

1. Environment risks and impacts, as assessed above, for various project activities under this sub-project are categorised as Low and Moderate due to localised nature of proposed activities i.e. activities remain limited to dam area except for labour camp and muck/debris disposal.
2. Execution of civil and hydro-mechanical work within dam body will generate localised impacts on physical environment and resource use; pose risk of exposure of workers requiring personal protective equipment (PPE) use.
3. Civil work interfaced with water body such as work on upstream face of dam, grouting shall pose risk of water pollution and impact on fish fauna.Ingredients for the preparation of mortars and grouting suspensions include cement, clay and fillers, bentonite, asphalt, additives for stability and water. Some ingredients and chemicals used in the preparation of mortars and grouting suspensions may be toxic, neurotoxic or carcinogenic, and may be irritants. Their use may have negative impacts on both humans and the environment.
4. Construction and demolition waste and muck require careful disposal at pre-identified and approved site to minimise the risk of pollution on this count.
5. No impact on general ecology is envisaged.

Social Risk and impacts

1. As the interventions are within the dam premises and on the dam structure, there shall be no adverse impacts on land and assets due to any sub-component or sub-activities
2. The dam is not located in the Schedule V area. Though are Scheduled Tribes households in the vicinity, these are mainstreamed into the overall society and do not meet the characteristics outlined in ESS 7. There will be no physical interventions.
3. Influx of migrant labour will be low as these works require only few but very skilled labour Also these workers will mostly operate from labour camps within the dam premises/proximity and hence there would be minimal interface with communities and therefore significantly lower SEAH/GBV risks.

4. Waste generation from labour colony can pollute drinking water sources of community; risk is low and can be mitigated by providing adequate sanitation facilities.
5. No impacts are envisaged on cultural heritage as works shall not be undertaken in their vicinity or result in any impact.
6. Labour related risk would include:

   - Safety issues while at work like injuries/accidents/ fatalities leading to even death, while at work; 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 OHS guidelines.
   - Short terms effects due to exposure to dust and noise levels, while atwork
   - Long term effects on life due to exposure to chemical /hazardouswastes
   - Inadequate accommodation facilities at work force camp, including inadequate sanitation and health facilities
   - Sexual harassment at work
   - Absence or inadequate or inaccessible emergency response system for rescue of labour/workforce in situations of natural calamities.
   - Health risks of labour relating to HIV/AIDS and other sexually transmitted diseases
   - Non-payment of wages
   - Discrimination in Employment (e.g. abrupt termination of the employment, working conditions, wages or benefits etc.)
   - Unclear terms and conditions of employment
   - Discrimination and denial of equal opportunity in hiring and promotions/incentives/training opportunities
   - Denial for workers' rights to form worker's organizations, etc.
   - Absence of a grievance mechanism for labour to seek redressal of their grievances/issues

Chapter 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

5.1.1 Risk Classification

As per the ESDD exercise, risk/impacts that have been identified relate to Water Quality, Fisheries, Occupational Health, Physical Environment, labour and SEAH/GBV. The summarised environmental and social risks of identified activities with level of risk is presented in previous chapterThese risks are low to moderate and localized, short term and temporary in nature which can be managed with generic ESMP and guidelines. Environment risks of air, water, noise; land use, soil and resource use for most of the activities as well as social risks of labour and OHS to labour/community are Moderate. Environment risks of pollution downstream and upstream along with that of fish and aquatic life are categorised as Moderate for grouting works due to interface with water bodies. Environmental risk relating to Labour camp has been flagged as Moderate on environment.

Hence the overall risk of this sub-project Dam is categorized as Moderate.

5.1.2 National Legislation and WB ESS Applicability Screening

The applicability analysis of GoI legal and regulatory framework indicates that while, there are various legislations which will have to be followed by the contractor for the protection of environment, occupational health and safety of workers and protection of workers and employment terms. None of Indian legislation is applicable warranting obtaining clearance prior to start of construction/improvement work.

Four ESS standards are found relevant to this sub-project as per reasons given in **Table 5.1** below:

Table 5.1: WB ESF Standards applicable to the sub-project

Relevant ESS	Reasons for Applicability of the standard
ESS2: Labour and Working Conditions	Direct worker in Maharashtra; there are no protected monuments in and around dam site i.e. within 10 km radius of dam site. Contracted workers and Community workers (likely for EAP and other non-structural interventions)
ESS3: Resource Efficiency, Pollution Prevention and Management	Civil and hydro-mechanical work including resource consumption requiring protection of physical environment and conservation of resources

Relevant ESS	Reasons for Applicability of the standard
ESS 4: Community Health and Safety	Transportation of material, and accidental risk during repair /improvement work and also leading to SEA/SH GBV risk
ESS 10: Stakeholder Engagement Plan	For engagement of stakeholders in all structural and non-structural interventions e.g. Instruments, seismograph, cctv cameras.

5.2 RECOMMENDATIONS

5.2.1 Mitigation and Management of Risks and Impacts

Since risks and impacts are low to moderate category, a generic and standard guidance in accordance with the ESMF shall be followed. It shall cover the following aspects

a. SPMU shall customise the generic Environmental and Social Management plan (ESMP) that has been provided in the Environmental and Social Management Framework (ESMF) and make it part of bid document for effective adherence by contractors.

b. It is recommended that ESMP provides due measures for protection of environment quality and resource conservation (during handling of resources) in line with ESF standard ESS3 requirements. Similarly, any impacts identified on fisheries have to be conserved. Likewise, due attention has to be given to Occupational Health and Safety of workers and community in line with the requirements of ESS4 and World Bank Group guidelines on Occupational Health and Safety (OHS). Hence SPMU shall develop following plans in line with outline provided in the ESMF and ensure its adherence by contractor:

   i. Resource Conservation Plan (RCP)
   ii. Labour Management Plan (LMP)
   iii. Occupational Health and safety Management Plan (OHSP) and Emergency Action Plan for contractors activities
   iv. Muck Management Plan (MMP)
   v. Gender Based Violence/Sexual Exploitation and Abuse Plan
   vi. Stakeholders Engagement Plan (SEP)

c. Contractor shall submit commitment to comply with ESMP and will also include environmental and social budget, as required, as part of bid submission as specified in the bid documents.

Mitigation plans to meet requirements for relevant Standards with responsibility and stages are given in **Table 5.2** below:

Table 5.2: List of Mitigation Plans with responsibility and timelines

WB-ESS Triggered	Mitigation Instrument	Responsibility	Timelines
ESS2: Labour and Working Conditions	• LMP • OHS • GBV/SEAH	SPMU CPMU for GBV/SEAH	Before mobilization of contractor GBV/SEAH by appraisal
ESS3: Resource Efficiency, Pollution Prevention and Management	• ESMP • Muck Management Plan • Resource Conservation Plan	SPMU	Before mobilization of contractor
ESS 4: Community Health and Safety	• EAP	CPMU and SPMU	Within one year of commencement of work
ESS 10: Stakeholder Engagement Plan	• SEP in accordance with project SEF	SPMU	By negotiation (and to be updated once the EAP preparation is to commence

SPMU shall disclose the finalized ESDD, ESMP, ESCP and other related plans on its website after formal approval from CPMU. Executive summary of proposed ESMP based on ESDD shall be translated and disclosed in local language.

5.2.2 Institutional Management, Monitoring and Reporting

ESMP will be developed by SPMU and will be part of the bid document of the sub project and shall be shared with CWC by SPMU for their review/ endorsement and approval. IA shall designate a Nodal Officer to coordinate and supervise E&S activities. The SPMUs will hire the qualified staffs to support management of E&S risks including Environmental Expert, Social Expert for ensuring compliance with the Bank's ESF and ESS's and ensures that these activities shall be implemented as per the procedures. Specifically, as included in the ESCP, every SPMU shall be strengthened from environmental and social risk perspective during implementation of the sub-projects. A dedicated Environmental and Social staff with requisite skill shall be placed in the SPMU and will be utilized to enable (a) development of ESDD of each sub project either through an agency or in house, (b) E and S staff will coordinate to hire consultants where ESDDs suggest a high risk for undertaking detailed ESIA, (c) preparation of environmental and social management plans (ESMPs) based on type of risks as well subsequent implementation of mitigation measures during implementation. IA will hire experts from outside department with relevant experience. These E&S experts will work in coordination with Project Management Consultancy (PMC) contracted by CPMU – CWC.

SPMU shall advise contractors about applicable legislative requirements and ensure that contractors fully comply with applicable requirements and submit compliance reports to SPMU on quarterly basis. SPMU, WRD will share regular implementation status of ESMPs to CWC and The World Bank in line with Environmental Social Commitment Plan (ESCP) on quarterly basis.

WRD shall establish and operationalize a grievance mechanism to receive and facilitate resolution of complaints and grievances, from the communities and other stakeholders including implementation partners. Grievance redress mechanism will be designed to address concerns and complaints promptly and transparently with no impacts (for any complaints made by project affected people (PAPs). GRM will work within existing legal and cultural frameworks and shall comprise project level and respective State level redress mechanisms. Details on the processes and procedures for the GRM are provided in the Stakeholder Engagement Framework.

PMC for the project will have sufficient staff with skills on Environment and Social aspects. Awareness raising and capacity building on the new Environmental and Social Framework (ESF) need to be carried out for the environment and social staff engaged and this will be an area of continued focus, with a view to generate awareness at to dam level. Project Management Consultancy (PMC) shall coordinate with CWC for approval, documentation, disclosure and implementation of these ESMPs in line with project ESMF and ESCP.

Overall, the proposed activities within this Dam sub-project have low to moderate risks resulting in the overall sub-project to be categorized as Moderate risk category. These risks and impacts can be effectively mitigated with effective implementation of mitigation plans by SPMU, Contractors and monitoring by PMC and CWC.

Annexure - I: Form SF1

Sl. No	Project Component	Applicable (A), Not Applicable (NA)	Environment and Social Risk Associated within dam area (DI), Beyond Dam Area (DE)	Likely Nature of Risk/Impact Water Quality (WQ), Fisheries (F), Conservation area (CA), Protected Area (PA), Ecological (E), Occupational Health (OH), Physical Environment (PE), Cultural (C), Tribal presence (T), impact on private land/assets/encroachers/squatters (LA), Labour (L), GBV risks (G), (Write whichever is applicable)
1	**2**	**3**	**4**	**5**
A	**Nature of Project Component Related**			
1	Reservoir Desiltation	**NA**		
2	Major structural changes – Spillway construction (Improving ability to withstand higher floods including additional flood handling facilities as needed.)	**NA**		
3	Structural strengthening of dams to withstand higher earthquake loads	**NA**		
4	Structural Improvement/Repair work -upstream of Dam site (interfacing dam reservoir) (like Treatment on u/s face for reducing leakages, Upstream cement grouting of Dam body etc)	**NA**		
5	Structural Improvement/Repair work -Downstream of Dam site (with no interfacing with dam reservoir) (like Downstream cement grouting of Dam body for reducing leakages, Strengthening of the dam buttress etc.)	**NA**		
6	Remodelling earth dams to safe, stable cross sections	**NA**		
7	Electro-mechanical activities with interface with dam reservoir	**A**	**DI**	**OH, WQ, L, G**
8	Electro-mechanical activities Downstream of Dam site (with no interfacing with dam reservoir)	**A**	**DI**	**OH, WQ, L, G**
9	Instrumentation, General lighting and SCADA systems	**A**	**DI**	**OH, L**
10	Basic Facilities (like access road improvement, renovation of office, etc)	**A**	**DI**	**OH, PE, L, G**
11	Utility installation like standby	**NA**		

Sl. No	Project Component	Applicable (A), Not Applicable (NA)	Environment and Social Risk Associated within dam area (DI), Beyond Dam Area (DE)	Likely Nature of Risk/Impact Water Quality (WQ), Fisheries (F), Conservation area (CA), Protected Area (PA), Ecological (E), Occupational Health (OH), Physical Environment (PE), Cultural (C), Tribal presence (T), impact on private land/assets/encroachers/squatters (LA), Labour (L), GBV risks (G), (Write whichever is applicable)
1	**2**	**3**	**4**	**5**
	generator, or setting up solar power systems			
12	Painting Work	**NA**		
13	Water recreation activities	**NA**		
14	Tourism Development	**NA**		
15	Solar power/floating solar	**NA**		
16	List any other component not listed above			
i	Addition of Geo-membrane / Concrete cladding	**NA**		
B	**Pre-construction and construction stage major auxiliary or preparatory intervention**			
1	Acquisition of forest land involved	**NA**		
2	Taking of private land (including physical or economic displacement, impact on livelihood; temporary loss of business)	**NA**		
3	Major Borrow materials requirement involved	**NA**		
4	Major Quarry materials requirement involved	**NA**		
5	Blasting involved	**NA**		
6	Resettlement and Rehabilitation	**NA**		
7	Types of project workers (Direct, Contracted, Community Workers (or Volunteers i.e. for EAP implementation)	**NA**		
8	Labour Camps involved (location within dam premises or outside)	**A**	**DI**	**WQ, PE, L, G, E**
9	Migrant labour likely to be involved	**A**	**DI**	**G**
10	Heavy machinery to be deployed and related maintenance workshop set up involved	**A**	**DI**	**OH, PE, L, G**
11	Hot mix plant Requirement	**NA**		
12	Concrete mixture and heavy	**A**	**DI**	**OH, PE, L, G**

Sl. No	Project Component	Applicable (A), Not Applicable (NA)	Environment and Social Risk Associated within dam area (DI), Beyond Dam Area (DE)	Likely Nature of Risk/Impact Water Quality (WQ), Fisheries (F), Conservation area (CA), Protected Area (PA), Ecological (E), Occupational Health (OH), Physical Environment (PE), Cultural (C), Tribal presence (T), impact on private land/assets/encroachers/squatters (LA), Labour (L), GBV risks (G), (Write whichever is applicable)
1	**2**	**3**	**4**	**5**
	pumps to be deployed			
13	Temporary land acquisition involved	**NA**		
14	Temporary disruption to access, livelihoods	**NA**		
15	Tree felling/ vegetation clearance involved	**NA**		
16	Haulage of machinery involved	**A**	**DI**	**OH, PE, L, G**
17	Major Debris Disposal involved	**NA**		
18	Major Transport of materials involved	**A**	**DE**	**PE, L, G**
19	Utility shifting involved	**NA**		
20	Discharge of reservoir water (lowering of reservoir water involved)	**NA**		
21	**List any other not listed above**			

Annexure – II: Form SF2

Sl. No	Applicable Sub-Project Component/ Construction preparatory Work related Sub activity (s per SC-1)	Nature of Risk (Conforming to Column 5 of SF-1) and nature of sub activity	Elaborate cause (risk) and its effect (Impact) on environment /social	Risk/Impact intensity for each type of risk/impact Low (L), Moderate (M), Substantial (S), High (H)
1	**2**	**3**	**4**	**5**
A	**Project Component Related**			
1.	**Structural Strengthening/Improvement/Repair work -upstream of Dam site**			
a	NIL	**WQ, F, OH, PE, L, G**	Air pollution, noise pollution, , risk of reservoir water contamination and impact on fishes, generation of construction debris, Occupational health and safety risk due to working on upstream face of dam, labour and GBV risk	**M**
2.	**Structural Improvement/Repair work -Downstream of Dam site (with no interfacing with dam reservoir) (like repair of parapet walls, damage spillway crest, downstream training walls, etc.)**			
a	Cleaning of V.P.D pipes in gallery.	**WQ, F, OH, PE, L, G**	Air pollution, noise pollution, , risk of river water contamination and impact on fishes, generation of construction debris, Occupational health and safety risk due to working on upstream face of dam, labour and GBV risk	**L**
b	Cleaning & dewatering of stilling basin.	**WQ, OH, PE, L, G**	Air pollution, noise pollution, risk of spillage of wastewater to river, construction debris, muck, Occupational health and safety risk. Labour &GBV risk	**L**
c	Maintainance of Earthen dam.	**WQ, PE, L, G**	Air pollution, noise pollution, water pollution, Labour and GBV risk	**M**
d	Repairing of pitching of Sapan River Project	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**M**

Sl. No	Applicable Sub-Project Component/ Construction preparatory Work related Sub activity (s per SC-1)	Nature of Risk (Conforming to Column 5 of SF-1) and nature of sub activity	Elaborate cause (risk) and its effect (Impact) on environment /social	Risk/Impact intensity for each type of risk/impact Low (L), Moderate (M), Substantial (S), High (H)
1	**2**	**3**	**4**	**5**
e	Supply & installation of Digital seismograph.	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**L**
f	Repair to horizontal drainage pipe in gallery.	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**L**
H	Construction of approach road at dam top.	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**M**
i	Turfing on Earthen dam of Sapan river project.	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**L**
J	Construction ofInspection,instrumentation and watchman Room at Dam.	**OH, PE, L, G**	Air pollution, noise pollution, construction debris, Occupational health and safety risk	**L**
3.	**Electro-mechanical activities Downstream of Dam site (with no interfacing with dam reservoir)**			
A	Electrical works	**OH, PE, L, G**	Occupational health and safety risk due to electrical work, waste generation from removed parts and packing material, Labour & GBV risk	**L**
B	CCTV Camera	**PE, L, G**	Waste generation from removed parts and packing material, Labour & GBV risk	**L**
4.	**Instrumentation, General lighting and SCADA systems**			
a	Dam Instrumentation (Geo-technical, hydro-meteorological, Seismic, Geodetic, data collection, storage, data transfer, analysis, retrieval, Operation &Maintenance etc.).	**OH, PE, L, G**	Occupational health and safety risk due to electrical work, waste generation from removed parts and packing material, labour and GBV risk	**L**
B.	**Pre-construction and construction stage major auxiliary or preparatory intervention**			

Sl. No	Applicable Sub-Project Component/ Construction preparatory Work related Sub activity (s per SC-1)	Nature of Risk (Conforming to Column 5 of SF-1) and nature of sub activity	Elaborate cause (risk) and its effect (Impact) on environment /social	Risk/Impact intensity for each type of risk/impact Low (L), Moderate (M), Substantial (S), High (H)
1	**2**	**3**	**4**	**5**
1	Types of project workers (Direct, Contracted, Community Workers (or Volunteers i.e. for EAP implementation)	**L, G**	GBV risk due to involvement of workers and local population	**L**
2	Labour Camp involved (location within dam premises or outside)	**WQ, PE, G**	Wastewater generation from domestic activities, waste generation, GBV risk within labour and involving community.	**M**
3	Migrant labour likely to be involved	**L, G**	Migrant labour having low degree of interface with community	**L**
4	Likely interface of Workers with communities	**L, G**	Risk of GBV due to labour interaction with community	**L**
5	Heavy machinery to be deployed and related maintenance workshop set up involved	**OH, PE, L, G**	Heavy machinery will be deployed for repair and maintenance of gates and hoists and for other activities - OH risk due to machine handling, waste, wastewater and air emissions from machines operations, hazardous waste generation from oil waste, Labour & GBV risk	**L**
6	Concrete mixture and heavy pumps to be deployed	**OH, PE, L, G**	Concrete mixture and pumps will be deployed for road repair and other civil works and de-watering - OH risk due to machine handling, waste generation, wastewater and air emissions from operations, hazardous waste generation from oil waste, Labour & GBV risk	**L**
7	Haulage of machinery involved	**OH, PE, L, G**	Machines will be hauled from different location and brought to site; OHS risk during loading/unloading and air and noise pollution during transportation, labour and GBV risk	**L**
8	Major Debris Disposal involved	**OH, PE, L, G**	Debris will be generated from various repair activities - OH	**M**

Sl. No	Applicable Sub-Project Component/ Construction preparatory Work related Sub activity (s per SC-1)	Nature of Risk (Conforming to Column 5 of SF-1) and nature of sub activity	Elaborate cause (risk) and its effect (Impact) on environment /social	Risk/Impact intensity for each type of risk/impact Low (L), Moderate (M), Substantial (S), High (H)
1	**2**	**3**	**4**	**5**
			risk during debris handling, air and noise emissions from debris handling and transportation, water pollution risk due to debris finding its way to water body, and GBV risk due to labour involvement	
9	Major Transport of materials involved	**OH, PE, L, G**	Material will be transported from various vendors and suppliers to site for civil, hydro-mechanical work and instrumentation - - OH risk during material handling, loading and unloading; ,air and noise emissions from transportation, Labour and GBV risk	**L**

Criteria for Risk Evaluation :
Low : Localized, temporary and Negligible
Moderate : temporary, or short term and reversible under control
Substantial : medium term , covering larger impact zone, partially reversible
High : significant , non- reversible, long term and can only be contained/compensated
Occupational Health and safety: it will be treated as Moderate by default as OHS effect can be kept controlled and with negligible effect with adoption of defined guidelines,