Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity
****
Ministry of Agriculture and Environment

WATER INFRASTRUCTURE FOR SUSTAINABILITY, EFFICIENCY, AND RESILIENCE PROJECT (WISER, P517530)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

November 2026

TABLE OF CONTENTS

ABBREVIATIONS & ACRONYMS ..... **V**

EXECUTIVE SUMMARY ..... **VII**

1. INTRODUCTION ..... **IX**

1.1 PROJECT RATIONALE 9
1.2 PROJECT DEVELOPMENT OBJECTIVE AND COMPONENTS 9
1.3 BRIEF DESCRIPTION OF PROPOSED SUBPROJECTS 2
1.3.1 Nam Houm and Nam Suang Subproject *2*
1.3.2 Nam Hin Subproject *6*
1.3.3 Preliminary Key Interventions *7*
1.3.4 Other Subprojects/Activities *8*
1.4 POTENTIAL AREA OF INFLUENCE (AOI) 8
1.5 PURPOSE, SCOPE AND APPLICATION OF ESMF 9

2. LEGAL AND REGULATORY FRAMEWORKS **11**

2.1 NATIONAL DAM SAFETY, ENVIRONMENTAL AND SOCIAL LEGAL FRAMEWORKS 11
2.2 WORLD BANK'S ENVIRONMENTAL AND SOCIAL STANDARDS (ESS) 16
2.2.1 World Bank Dam Safety Requirements *19*
2.3 ANALYSIS OF GAPS BETWEEN THE WORLD BANK ESS AND NATIONAL LAWS AND REGULATIONS 20
2.4 ENVIRONMENTAL, HEALTH AND SAFETY (EHS) GUIDELINES OF THE WORLD BANK 23

3. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS **25**

3.1 NAM HOUM IRRIGATION SYSTEM ..... **ERROR! BOOKMARK NOT DEFINED.**
3.1.1 Physical Environment ..... ***Error! Bookmark not defined.***
3.1.2 Biological Environment ..... ***Error! Bookmark not defined.***
3.1.3 Environmental Conditions ..... ***Error! Bookmark not defined.***
3.1.4 Socio-economic and Cultural Environment ..... ***Error! Bookmark not defined.***
3.2 NAM SUANG IRRIGATION SYSTEM ..... **ERROR! BOOKMARK NOT DEFINED.**
3.2.1 Physical Environment ..... ***Error! Bookmark not defined.***
3.2.2 Biological Environment ..... ***Error! Bookmark not defined.***
3.2.3 Environmental Conditions ..... ***Error! Bookmark not defined.***
3.2.4 Socio-economic and Cultural Environment ..... ***Error! Bookmark not defined.***
3.3 NAM HIN IRRIGATION SYSTEM ..... **ERROR! BOOKMARK NOT DEFINED.**
3.3.1 Physical Environment ..... ***Error! Bookmark not defined.***
3.3.2 Biological Environment ..... ***Error! Bookmark not defined.***
3.3.3 Environmental Conditions ..... ***Error! Bookmark not defined.***
3.3.4 Socio-economic and Cultural Environment ..... ***Error! Bookmark not defined.***

4. ENVIRONMENTAL & SOCIAL RISKS AND IMPACTS, AND MITIGATIONS MEASURES **29**

4.1 POSITIVE IMPACTS 30
4.2 NEGATIVE IMPACTS, E&S RISKS AND MITIGATION MEASURES 32
4.3 CLIMATE RISK SCREENING, CLIMATE-RESILIENT DESIGN, AND CLIMATE CHANGE ADAPTATION 43

5. PROCEDURES FOR ENVIRONMENTAL & SOCIAL MANAGEMENT **46**

5.1 ENVIRONMENTAL AND SOCIAL SCREENING 47
5.1.1 Purpose and timing of screening *47*
5.1.2 Responsibilities and how screening is conducted *47*
5.1.3 How to use the ES Screening Form ..... ***Error! Bookmark not defined.***
5.1.4 How to analyze the screening results *48*
5.2 PREPARATION OF SITE-SPECIFIC E&S MANAGEMENT INSTRUMENTS 50

6. IMPLEMENTATION ARRANGEMENTS **54**

6.1 PROJECT STEERING COMMITTEE (PSC) 55
6.2 PROJECT MANAGEMENT UNIT (PMU) –DOI 55
6.3 COMPONENT MANAGEMENT UNIT (CMU) –DWR 56

6.4 Project Implementation Units (PIUs) 56
6.5 Panel of Experts (PoE) 57
6.6 Environmental and Social Monitoring Committee (ESMC) 57
6.7 Provincial and District Resettlement Committees (PRC/DRC) 58
6.8 Grievance Redress Committees (GRCs) 58
6.9 Environmental and Social Consultant (Firm) 58
6.10 Feasibility Study and Detailed Engineering Design (FS & DED) Consultant 59
6.11 Implementation Support and Work Supervision Consultant (ISWS) 60
6.12 Contractors 60
6.13 Capacity Assessment and Capacity Building 61

7. STAKEHOLDER ENGAGEMENT, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM (GRM) 63

7.1 Stakeholder Engagement 63
7.1.1 Requirements of Stakeholder Consultation 63
7.1.2 Summary of Stakeholder Consultations during Project Preparation 64
7.2 Information Disclosure 69
7.3 Grievance Redress Mechanism (GRM) 70
7.3.1 World Bank ESF Requirements 70
7.3.2 National Requirements 70
7.3.3 Principles of the Project GRM 70
7.3.4 Project GRM and Grievance Resolution Process 71

8. MONITORING AND REPORTING 72

8.1 Internal Monitoring 72
8.2 Environmental and Social Monitoring Reports 76
8.3 Incident and Accident Reporting 77
8.4 External Monitoring 78

9. COSTS AND BUDGET 78

10. ANNEXES 82

10.1 Annex 1 – Ineligible / Negative Criteria List 82
10.2 Annex 2 – Environmental and Social Screening Form 84
10.3 Annex 3 – Guidance and Templates for Preparation of Site-Specific Environmental and Social Instruments 90
Illustrative Table of Contents for Site-Specific Environmental and Social Impact Assessment (ESIA) 92
Illustrative Table of Contents for Site-Specific Environmental and Social Management Plan (ESMP) 97
Illustrative Table of Contents for Contractor Environmental and Social Management Plan (C-ESMP) 102
10.4 Annex 4 – Emergency Preparedness Plan Framework (EPPF) 107
10.5 Annex 5 – Operation and Maintenance Plan (O&MP) Outline 144
10.6 Annex 6 – Guidance for Preparation of Biodiversity Management Plan (BMP) 145
10.7 Annex 7 – Cultural Heritage Management Measures and Chance Find Procedure 147
10.8 Annex 8 – UXO Risk Management Procedures 149
10.9 Annex 9 – Reportable Incidents 151
10.10 Annex 10 – Environmental and Social Code of Practice (ESCOP) 156
10.10.1 Introduction and scope of application 156
10.10.2 Objectives 156
10.10.3 Responsibilities 156
10.10.4 General provisions 156
10.10.5 Specific requirements 157
10.10.6 Works management and monitoring 158

LIST OF TABLES

Table 1-1: Key characteristics summary of all project sites 5
Table 2-1: Legal Frameworks Related to Dam Safety, Water Supply and Irrigation 11

Table 2-2: Legal Frameworks Related to Environmental Protection and Biodiversity 13
Table 2-3: Legal Frameworks Related to Social Protection, Labor, and Community Health and Safety 14
Table 2-4: Legal Frameworks Related to Ethnic Groups and Cultural Heritage 16
Table 2-5: Applicable World Bank Environmental and Social Standards (ESSs) 17
Table 2-6: Gap Analysis of Legislative and Regulatory Framework of Lao PDR vs. World Bank ESSs 20
Table 4-1: Summary of E&S Risks, Negative Impacts and Proposed Mitigation Measures by WB's ESS ... 32
Table 6-1: ES Capacity Building Plan 62
Table 7-1: Overview of stakeholder consultations held to date 65
Table 7-2: Project GRM and Grievance Resolution Process 71
Table 8-1: Environmental and Social Monitoring Responsibilities 72
Table 8-2: Proposed Environmental and Social Monitoring Measures 74
Table 9-1: Estimated Budget for ESMF Implementation 79

LIST OF FIGURES

Figure 1-1: Location Map of Nam Houm and Nam Suang Irrigation Systems including reservoir surface area, irrigation network main canals, Phou Phanang Protected Area (green) and the dams (black dots) .. 3
Figure 1-2: Location Map of Nam Suang Irrigation Dam & System 4
Figure 1-3: Location Map of Nam Houm Irrigation Dam & System 4
Figure 1-4: Location Map of Nam Hin Irrigation Systems including reservoir surface area, Nam Hin tributary river, Nam Mao tributary river and Nam Ko(r) river flowing through Muang Xai City. Also indicated are critical infrastructure in Muang Xai including the Lao-China-Railway station and the airport. 7
Figure 1-5: Location Map of Nam Hin Irrigation System 7
Figure 6-1 Implementation Arrangements 55

ABBREVIATIONS & ACRONYMS

Abbreviation	Definition
BMP	Biodiversity Management Plan
CERC	Contingent Emergency Response Component
CERC-ESMF	Contingent Emergency Response Component – Environmental and Social Management Framework
C-ESMP	Contractor Environmental and Social Management Plan
CFP	Chance Find Procedure
CHSP	Community Health and Safety Plan
CMU	Component Management Unit
DBA	Dam Break Analysis
DED	Detailed Engineering Design
DOI	Department of Irrigation
DRC	District Resettlement Committee
DSP	Dam Safety Plan
DWR	Department of Water Resources
EAP	Emergency Action Plan
ECC	Environmental Compliance Certificate
EGEF	Ethnic Group Engagement Framework
EGEP	Ethnic Group Engagement Plan
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EPP(F)	Emergency Preparedness Plan (Framework)
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESFP	Environmental and Social Focal Point
ESIA	Environmental and Social Impact Assessment
ESMC	Environmental and Social Monitoring Committee
ESMP	Environmental and Social Management Plan
ESMR	Environmental and Social Monitoring Report
ESIRT	Environmental and Social Incident Response Toolkit
ESS	Environmental and Social Standard
E&S	Environmental and Social
FPIC	Free, Prior and Informed Consent
FS	Feasibility Study
GAP	Good Agricultural Practices
GIIP	Good International Industry Practice
GM	Grievance Mechanism
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IEE	Initial Environmental Examination
ISWS	Implementation Support and Works Supervision Consultant
LFND	Lao Front for National Development

Abbreviation	Definition
LMP	Labor Management Procedures
MAE	Ministry of Agriculture and Environment
MICT	Ministry of Information, Culture and Tourism
MPA	Multiphase Programmatic Approach
NRA	National Regulatory Authority
OHS	Occupational Health and Safety
O&MP	Operation and Maintenance Plan
PAEO	Provincial Agriculture and Environment Office
PICT	Provincial Information, Culture and Tourism Office
PIU	Provincial Project Implementation Unit
PMU	Project Management Unit
POE	Panel of Experts
PPE	Personal Protective Equipment
PRC	Provincial Resettlement Committee
PSC	Project Steering Committee
Q-ESMR	Quarterly Environmental and Social Monitoring Report
RDMP	Reservoir Drawdown Management Plan
RPF	Resettlement Policy Framework
RP	Resettlement Plan
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SS-ESIA	Site-specific Environmental and Social Impact Assessment
SS-ESMP	Site-specific Environmental and Social Management Plan
TMP	Traffic Management Plan
ToR	Terms of Reference
UXO	Unexploded Ordnance
WAP	Water Allocation Plan
WB	World Bank
WISER	Water Infrastructure for Sustainability, Efficiency, and Resilience Project
WMP	Waste Management Plan
WUG	Water User Group

EXECUTIVE SUMMARY

Project and purpose. The Water Infrastructure for Sustainability, Efficiency and Resilience Project (WISER, P517530) is a US$65 million IDA-financed operation and the third phase of the Multiphase Programmatic Approach (MPA, P512842). It will be implemented by the Department of Irrigation (DOI) within the Ministry of Agriculture and Environment (MAE). WISER aims to increase water security and enhance the resilience of selected water infrastructure to water-related climate risks. It has four components: (1) Modernization and Improvement of Water Storage and Delivery Systems (US$55 million); (2) Strengthening Institutions for Water Resources Management (US$5 million); (3) Project Management (US$5 million); and (4) a Contingent Emergency Response Component (US$0). This Environmental and Social Management Framework (ESMF) sets out the principles, procedures and responsibilities for screening, assessing, managing and monitoring environmental and social (E&S) risks and impacts under the World Bank Environmental and Social Framework (ESF) and the laws of Lao PDR. It applies to all WISER activities, including those whose location and design are not yet known.

Priority subprojects. Component 1 will rehabilitate three existing irrigation dams, all rated High under the ICOLD dam safety risk rating: Nam Houm and Nam Suang (Vientiane Capital and Vientiane Province), which are about 7.5 km apart and managed as one subproject, and Nam Hin (Oudomxay Province). Preliminary works respond to dam safety condition assessments and include embankment buttressing, seepage control, crest levelling, enlarged or additional spillways, rehabilitated outlet and drawdown facilities, and canal rehabilitation at Nam Suang and Nam Hin. The downstream canal network at Nam Houm is financed by the ADB and is outside WISER's scope. Construction is expected to take 2 to 3 years at the dam sites and 3 to 5 years including downstream works, with partial or full reservoir drawdown likely.

Key risks. The Project is classified as Substantial for E&S risk under the WB ESF. The main environmental risks include dam safety, changes in water balance and allocation affecting downstream water users and aquatic ecosystems, and construction-related impacts such as erosion, sedimentation, water pollution, waste, dust, noise, and occupational and community health and safety risks. These risks may be exacerbated by climate variability, including increased flooding and prolonged dry periods. The main social risks include potential land acquisition, restrictions on land and water use, economic displacement and livelihood losses, labor influx, sexual exploitation and abuse and sexual harassment (SEA/SH), and impacts on ethnic groups. As the feasibility studies and detailed designs are not yet finalized, the nature and significance of site-specific E&S risks and impacts will be further assessed during implementation, and the Project's E&S risk classification will be reassessed as necessary.

E&S Management approach. The ESMF is accompanied by the Environmental and Social Commitment Plan (ESCP), Resettlement Policy Framework (RPF), Ethnic Group Engagement Framework (EGEF), Labor Management Procedures (LMP) and Stakeholder Engagement Plan (SEP). All proposed Project activities will first be assessed against the Ineligible/Negative Criteria List (which excludes new dams and any High-risk activity). Based on the E&S screening results, appropriate site-specific E&S instruments, including Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs), Resettlement Plans (RPs), and Ethnic Group Engagement Plans (EGEPs), will be prepared as required, taking into account the nature, scale, and significance of potential E&S risks and impacts, applicable ESSs, and national regulatory requirements. Contractors undertaking civil works will prepare and implement Contractor Environmental and Social Management Plans (C-ESMPs) based on the approved site-specific ESMPs. In line with ESS4 Annex 1 and the World Bank Good Practice Note on Dam Safety, the Project will prepare an Emergency

Preparedness Plan (EPP), an Operation and Maintenance Plan, an Instrumentation Plan and a Construction Supervision and Quality Assurance Plan separately for each of the three dams included in the two subprojects, with the EPP Framework and O&MP outline ready at appraisal (Annexes 4 and 5) and the remaining plans prepared by DED Consultant during implementation. Civil works will not start until required instruments are cleared and disclosed, permits and Environmental Compliance Certificates are obtained, and land and resettlement requirements are met.

Stakeholder engagement and grievance redress. During Project preparation, 26 consultation meetings were conducted between March and December 2025, involving 214 participants, approximately 28% of whom were women. Consultations included relevant government agencies, local communities, water users, farmers, fishing households, ethnic groups, and other stakeholders. Stakeholder engagement will continue throughout Project implementation, particularly during the preparation and updating of site-specific E&S instruments, to ensure that affected communities and other relevant stakeholders are meaningfully consulted and their concerns are appropriately addressed. Project information will be disclosed in Lao and English, as appropriate, and in culturally accessible formats and languages. Grievance redress arrangements will be established and maintained for Project-affected people and workers, including mechanisms for general Project-related grievances, resettlement-related grievances, labor grievances, and confidential reporting and referral of sexual exploitation and abuse and sexual harassment (SEA/SH) complaints, in accordance with the SEP and LMP.

Implementation and monitoring. The Project Management Unit (PMU), led by DOI, will have overall responsibility for E&S management and compliance with the ESMF, ESCP, and applicable site-specific E&S instruments. The Department of Water Resources (DWR), serving as the Component Management Unit for Component 2, and provincial Project Implementation Units (PIUs) will support E&S implementation within their respective responsibilities. The PMU and PIUs will be supported by the E&S Consultant, FS and DED Consultant, and Implementation Support and Works Supervision Consultant, while contractors will be responsible for implementing applicable E&S mitigation measures during construction. E&S performance will be monitored through regular site inspections, contractor supervision, periodic reporting, incident notification, and independent reviews, with corrective actions taken where non-compliance is identified. Capacity building will be provided to implementing agencies, supervision consultants, contractors, and other relevant stakeholders to strengthen E&S implementation and monitoring.

1. INTRODUCTION

1.1 Project Rationale

1. Lao PDR is a water-rich country which plays a strategic role in regional water security, economic integration, and cultural connectivity. Water is a vital driving force of Lao PDR's economic development. 81% of total employment in Lao PDR within the agriculture, fishery, forestry, mining, manufacturing, and power generation sectors is water dependent, demonstrating the tremendous dependence of the country's economy on its water resources. 75% of employment comes from subsistence agriculture and the agricultural sector is by far the largest water consumer in the country.

2. Dams are not only constructed for the purpose of power generation but also for irrigation, water supply, mining or mixed-use purposes. Despite of its vital importance, dam safety concerns in Lao PDR are growing due to a lack of capacity for O&M, inadequate oversight, and increasing exposure to climate risks. Past catastrophic dam-failure events have led the Government of Lao PDR to institutionalize dam safety management in the hydropower sector. Due to the absence of a national risk-based approach to dam safety, different systems for dam regulation and management are in place in the hydropower and irrigation sectors in Lao PDR. More frequent extreme weather events have led to crop losses and extensive damages to irrigation infrastructure, threatening food security and livelihoods alike. Since 75% of the farmland in Lao PDR is rainfed, the agricultural sector is particularly vulnerable to droughts.

1.2 Project Development Objective and Components

3. The Water Infrastructure for Sustainability, Efficiency and Resilience Project (WISER, P517530) is a US$65 million IDA-financed operation and the third phase of the Multiphase Programmatic Approach (MPA, P512842). The project will be implemented by the Department of Irrigation (DOI) within the Ministry of Agriculture and Environment (MAE). It will rehabilitate priority irrigation dams and their delivery systems, strengthen dam safety and water resources management institutions, and support project management and contingent emergency response. The Project has four components: 1) Modernization and Improvement of Water Storage and Delivery Systems (US$55 million), including dam safety and climate resilience, water distribution and delivery systems, and the Irrigation Water Management Center; 2) Strengthening Institutions for Water Resources Management (US$5 million); 3) Project Management (US$5 million); and 4) Contingent Emergency Response Component (US$0). Further details on the project design can be found in the Project Paper.

4. The Project Development Objective (PDO) aims to increase water security and enhance the resilience of selected water infrastructure to water-related climate risks in Lao PDR.

5. The project's primary beneficiaries would be farmers and rural households who are served by the rehabilitated irrigation dams and associated conveyance systems. Target beneficiaries would benefit from more reliable, efficient, and climate-resilient water service delivery for agricultural production and, where relevant, domestic water supply. The project is expected to reduce disruptions in water service, lower exposure to dam safety risks, and support more stable agricultural livelihoods and food security in the targeted areas. Secondary beneficiaries would include downstream communities benefiting from reduced safety risks, Water User Groups and local authorities with improved infrastructure management capacity, and national and subnational institutions that would gain stronger systems for dam safety, water resources planning, and inter-agency coordination.

1.3 Brief Description of Proposed Subprojects

6. From an environmental and social perspective, the Project has two priority subprojects covering three irrigation dams and their irrigation systems: (1) the Nam Houm and Nam Suang Subproject in Vientiane Capital (Nam Houm) and Vientiane Capital and Vientiane Province (Nam Suang), and (2) the Nam Hin Subproject in Oudomxay Province. The Nam Houm and Nam Suang dams are located only about 7.5 km apart, in a shared environment with comparable biophysical, land use and socio-economic conditions. The environmental and social risks and impacts of rehabilitating the two dams and their irrigation systems are therefore expected to be very similar, as are the communities and institutions involved. For this reason, they are screened, assessed and managed as one subproject, with a single set of site-specific instruments that addresses any differences between the two sites. Nam Hin is geographically separate, with its own catchment, command area and communities. The ESMF also applies to other WISER-financed activities that will be defined during implementation (Section 1.3.3).

1.3.1 Nam Houm and Nam Suang Subproject

A. Overview of the Nam Houm Irrigation Dam and System

7. The Nam Houm irrigation system lies in the Nam Houm sub-catchment of the Nam Ngum basin (catchment area about 100 km^2). The upper catchment is rolling to hilly terrain extending toward the Phou Phanang range, which is mainly degraded forest with small areas of semi-evergreen forest. The Nam Houm dam is about 4 km from the Phou Phanang protected area. Land use upstream and around the reservoir includes upland and shifting cultivation, bamboo and secondary forest, paddy fields in the lower command area, fishponds and settlements in 21 villages. The rehabilitation of the downstream irrigation channel network (starting after the irrigation intake) is financed separately by the ADB and is not included in WISER-financed activities. However, its potential relationship with WISER, including whether it qualifies as an Associated Facility under ESS1, will be assessed during E&S screening. Potential cumulative impacts and interactions between the two investments will also be considered during the preparation of site-specific E&S instrumentsLocated approximately 30 km from the Vientiane city centre, Nam Houm dam is a homogeneous embankment dam, a height of 14.8m and a storage capacity of 54.6 million m^3. The dam was constructed between 1978 and 1982 and is part of a cascade system (Nam Ngum River Basin). Its spillway has 7 steel lift gates, crossed by a road bridge, all 7 of which are essentially inoperable. The downstream discharge channel from the dam flows across agricultural and urban flood plain to the Nam Ngum River, approximately 8 km to the east.

8. The dam was designed to cover an irrigation command area of 4,300 ha. As of 2024, it covers only 3,500 ha and provides water to aquaculture ponds downstream, which is then redirected for irrigation to benefit 21 villages. The dam consists of a:

- Homogeneous embankment dam;
- Water intake tower housing two sluice gates equipped with screw hoist;
- Low level outlet conduit, embedded in the low part of the main embankment, near the left abutment; and
- Gated concrete U- channel surface spillway, located in natural ground close to the right abutment.

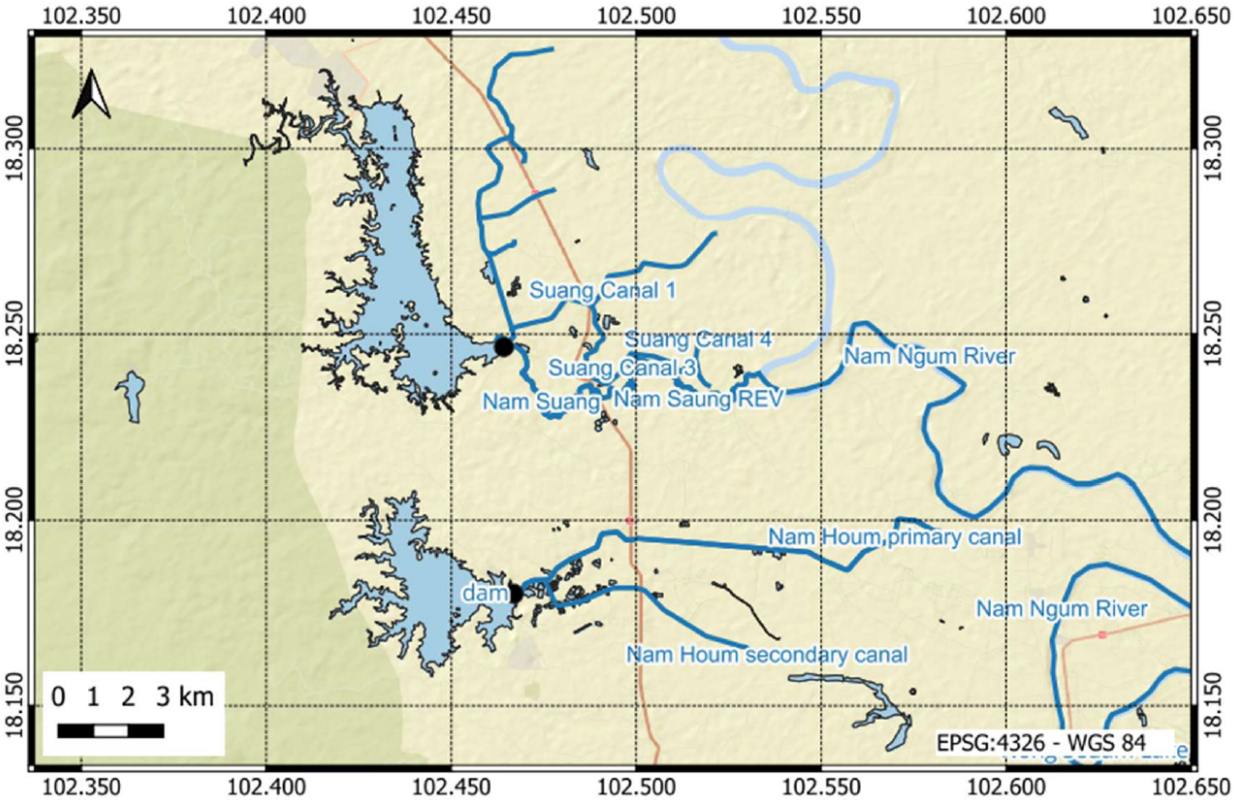


Figure 1-1: Location Map of Nam Houm and Nam Suang Irrigation Systems including reservoir surface area, irrigation network main canals, Phou Phanang Protected Area (green) and the dams (black dots)



Figure 1-2: Location Map of Nam Suang Irrigation Dam & System



Figure 1-3: Location Map of Nam Houm Irrigation Dam & System

B. Overview of the Nam Suang Irrigation Dam and System

9. The Nam Suang irrigation system lies on the Nam Suang River in the Nam Ngum basin, about 40 km from Vientiane, and forms part of a dam cascade in that basin. The upper catchment is a modified forest and agriculture landscape of secondary and mixed deciduous forest, bamboo, shrub regrowth, upland cultivation and settlements. It extends toward the Phou Phanang range, which retains degraded forest and small areas of semi-evergreen forest. The Nam Suang dam is about 5.5 km from the Phou Phanang protected area.

10. The dam is an embankment dam, 15.3 m high, built in 1978, with a reservoir storage capacity of 79.8 million m³ and a catchment area of 268 km². It has a low, wide, free-overflow spillway on the left abutment. Local use of the spillway for tourism and swimming was repeatedly observed during site visits in 2024 and 2025. The dam crest is uneven, meaning parts of the crest are low or incomplete, and it carries a public road that continues south toward Nam Houm.

11. Downstream, the irrigation system has a design command area of 8,100 ha, of which about 3,100 ha is currently irrigated (including about 800 ha of paddy rice). It is served by two main canals and 32 secondary canals, with a total length of about 25 km in total and benefits 25 villages. Around the main canals, paddy land is mixed with fishponds and integrated aquaculture and livestock farming that depend directly on canal water. The reservoir itself supports irrigation, capture fisheries and fish trading, and Nam Suang has been listed as an important wetland and reservoir site in national wetland inventories. The downstream discharge channel from the dam flows across agricultural and urban flood plain to the Nam Ngum River.

12. The key technical characteristics of all three project sites are listed below:

Table 1-1: Key characteristics summary of all project sites

Site characteristics	Nam Houm (Vientiane Capital)	Nam Suang (Vientiane Capital & Province)	Nam Hin (Oudomxay)
Year of construction	1982	1978	2010
Proximity to closest city (km)	30 (VTE)	40 (VTE)	6 (Muang Xai)
Dam Type	Embankment	Embankment	Embankment
Catchment area (km^2)	100	268	122
Dam height (m)	14.8	15.3	23.8
Reservoir storage capacity (Mio. m^3)	54.6	79.8	20.4
Risk Rating			
Population at Risk (PAR)	43,033	22,067	35,288
ICOLD Dam Safety Risk Rating	High	High	High
Hydraulics			
Current spillway discharge capacity (m^3/s)	188	225	109
Current Design Flood (Return Period)	17y	5y	5y
Post-Rehabilitation Design Flood (DOI Design Standard 2023)	500y	500y	500y
Irrigation Systems			
Design command area (ha)	4,300	8,100	150
Actual command area (ha)	3,500	3,100	30
Irrigation channel network length (km)	ADB Project Site	25km	10km

1.3.2 Nam Hin Subproject

A. Overview of the Nam Hin Irrigation Dam and System

13. The Nam Hin reservoir drains a catchment of about 122 km2 in the uplands south to south-east of Muangxay town in Oudomxay Province. The Nam Hin River is a tributary of the Nam Kor, which flows through Muangxay and also receives the flow of the Nam Mao. The catchment is made up of short, steep tributary valleys that rise toward upland ridges. These valleys can generate rapid runoff during intense monsoon rainfall, and where vegetation is removed the slopes are prone to sheet erosion, gullying and shallow landslides. Land use in the catchment includes secondary and fallow forest, upland and shifting cultivation, paddy fields along the valley floors, and scattered rural settlements. Villages in the catchment, including Nasaenkham and Houay Oun, are home to ethnic groups that practice shifting agriculture.

14. The embankment dam was built in 2010, is 23.8m high and has a storage capacity of 20.4 million m3. The water released from the dam flows back into the Nam Hin and Nam Kor rivers where it eventually reaches the downstream Nam Kor Hydropower Plant. The intake tower is made from reinforced concrete and partially buried in the upstream dam face. The dam also houses a gated bottom outlet (exit near the left abutment) and a gated irrigation conduit (exit near the right abutment). The spillway is a free-overflowing broad crested spillway with three stepped basins, located about 1.6km south of the dam itself, and an additional regulatory weir is located in the downstream channel.

15. The irrigation network has a design command area of 150ha with 30 ha currently irrigated (all paddy rice). Informal water abstractions from the reservoir to irrigate greenhouse crops have been observed during field visits in 2024 and 2025. The canal network consists of 1 main canal and 6 secondary canals.

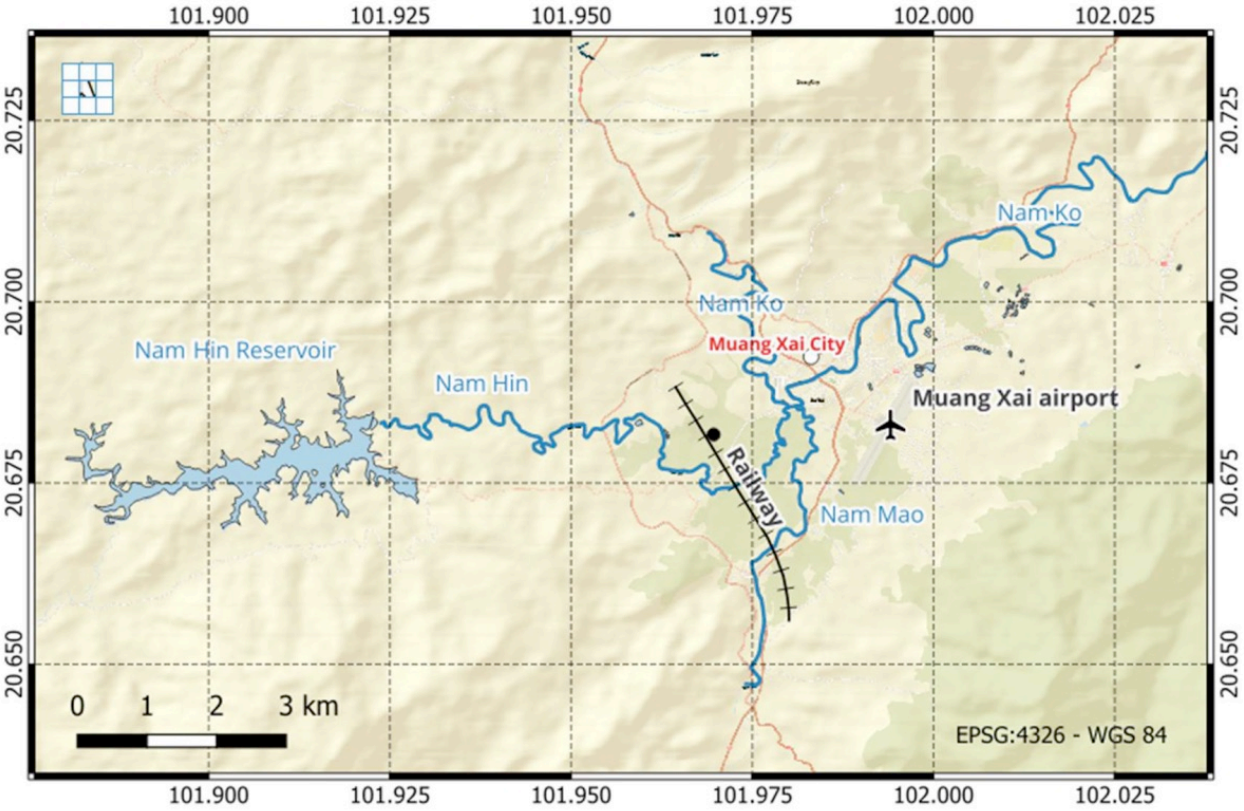


Figure 1-4: Location Map of Nam Hin Irrigation Systems including reservoir surface area, Nam Hin tributary river, Nam Mao tributary river and Nam Ko(r) river flowing through Muang Xai City. Also indicated are critical infrastructure in Muang Xai including the Lao-China-Railway station and the airport.



Figure 1-5: Location Map of Nam Hin Irrigation System

1.3.3 Preliminary Key Interventions

16. The interventions listed below respond to the findings of the dam safety condition assessments (DSAs), which were prepared as part of the feasibility study carried out by DOI to inform this project. The

DSAs flagged embankment condition, seepage at the downstream toe, inadequate spillway capacity for flood management, and insufficient drawdown capacity at all three dams. They are preliminary and subject to feasibility studies, detailed design and E&S screening. Embankment works at Nam Houm, Nam Suang and Nam Hin would include a downstream buttress with filter and drain layers, a drainage canal with a V-notch weir for seepage monitoring, levelling of the dam crest, and, where needed, a secant pile cutoff or grout curtain to reduce foundation seepage. Instrumentation such as piezometers and seepage monitoring would be installed. The buttress is expected to extend onto the toe road at Nam Houm and Nam Suang, and at Nam Hin the road would need to be moved away from the dam. Crest works would close the roads that cross the crest of Nam Suang and Nam Houm during construction.

17. Spillway and drawdown works would raise discharge capacity so that the dams can pass the design flood without overtopping and can be drawn down quickly in an emergency. This could involve widening the spillways (including rebuilding stepped weirs, retaining walls and stilling basins and extending the bridges), additional spillways, and rehabilitating outlet works with mechanical or remote-controlled gates. Where existing outlets are insufficient, additional discharge facilities such as siphons would be considered, while new culverts through the embankment are to be avoided. At Nam Suang, a secondary spillway might cross a major road and need a new bridge. At Nam Hin, a second spillway may be needed in a location with better geology, the spillway bridge and the toe road bridge may be rebuilt downstream along the realigned road, and the valve tower would be repaired, which requires full reservoir drawdown. At Nam Houm, because the spillway discharges to farmland and canals, the downstream canal network would need to be upgraded to carry flood flows. Downstream channels at all sites may need excavation to prevent them from restricting spillway capacity.

18. Irrigation system and complementary works would cover rehabilitation of canals in the command areas of Nam Suang and Nam Hin (lining, desilting and drainage improvements). At Nam Houm, the downstream irrigation channel network is financed by the ADB, so WISER will cover only the dam and its appurtenant structures. The WISER Project would also finance sediment management and nature-based solutions pilots, water accounting and hydrological modelling, and operation and maintenance plans. The key E&S implications at the construction stage are the same across sites. Construction is expected to take 2 to 3 years at the dam sites and 3 to 5 years including downstream works. Partial or full reservoir drawdown is likely, with full drawdown needed at Nam Hin for the valve tower repair. Land is also needed, with a limited extent of permanent acquisition likely along the spillways, and the toe road and neighbouring land at Nam Houm and Nam Suang. Temporary land is needed for contractor mobilisation, and temporary access restrictions and traffic disruption are likely for roads, bridges, farmland, fishing and tourism uses. Exact land take, affected households and any temporary resettlement are not yet known and will be determined in the site-specific ESIAs and RPs.

1.3.4 Other Subprojects/Activities

19. The ESMF applies to all WISER-financed activities. Activities whose location and scope will be confirmed during implementation include: (i) any additional dam or delivery system rehabilitation added under Component 1; (ii) construction of the Irrigation Water Management Center (Sub-component 1.3); iii) minor renovation of existing PIU offices, installation of monitoring stations, and other small-scale civil works, where applicable; (iv) technical assistance under Component 2, including dam safety regulation and river basin planning (Sub-component 2.2, DWR); (v) project management activities (Component 3); and (vi) CERC activities (Component 4), which will follow the CERC-ESMF. These activities will be screened using Annex 2 once identified.

1.4 Potential Area of Influence (AOI)

20. The following areas are potentially affected due to physical activities of construction contractors/subcontractors – during the construction phase of the subproject. The AOI is defined by subproject and will be refined in the site-specific ESIA. It includes:

a. Reservoir and dam area: the dam, spillway, intake structures and gates, and the reservoir at its existing full supply level. The full supply level will not be raised by the Project, and no additional inundation is expected. Where the dam crest is raised to increase freeboard, the AOI includes the embankment crest, abutments, the construction footprint and access, and the downstream area that benefits from improved flood safety. During works, temporary reservoir drawdown may affect water users and aquatic habitats in the reservoir and downstream.
b. Downstream area: the river reach, communities and water users affected by construction releases, drawdown and changes in releases, and the downstream area at risk in the event of a dam failure.
c. Irrigation intake and canals financed by the Project: the intake and appurtenant structures in the dams, and, for Nam Suang and Nam Hin, existing canals to be rehabilitated. At Nam Houm, the World Bank finances the dam and all relevant appurtenant structures (including the irrigation intake), while the ADB finances the downstream irrigation channel network.
d. Construction areas: work sites, camps, stockpile areas, borrow areas and quarries, spoil disposal sites, and access and haul routes. These locations are not yet known and will be determined at the detailed engineering design stage, and will be screened under Annex 2 before they are used.
e. Upstream catchment: areas where nature-based solutions and sediment management pilots are implemented.

1.5 Purpose, Scope and Application of ESMF

A. Purpose

21. This Environmental and Social Management Framework (ESMF) establishes the principles, procedures, and requirements for screening, identifying, assessing, managing, and monitoring environmental and social (E&S) risks and impacts associated with Project activities. The ESMF provides the guideline and principles for the preparation and implementation of environmental and social instruments required under the Project in accordance with the World Bank Environmental and Social Framework (ESF), the applicable Environmental and Social Standards (ESSs), and the laws and regulations of Lao PDR.

22. The ESMF is the main framework document for managing E&S risks and impacts of Project activities whose exact location and design are not yet known. It is prepared together with the Environmental and Social Commitment Plan (ESCP), the Resettlement Policy Framework (RPF), the Ethnic Group Engagement Framework (EGEF), the Labor Management Procedures (LMP) and the Stakeholder Engagement Plan (SEP). The ESMF sets the principles, procedures, roles and templates for preparing the site-specific instruments (SS-ESIA, SS-ESMP, C-ESMP, RP, EGEP, BMP, EPP and others) once footprints and designs are confirmed.

23. The ESMF also establishes procedures for environmental and social screening, risk classification, impact assessment, preparation of mitigation measures, institutional responsibilities, monitoring and reporting, stakeholder engagement, grievance management, and implementation arrangements to ensure that environmental and social risks and impacts are effectively managed throughout Project implementation.

24. Instruments are prepared at the following levels: (i) the SS-ESIA and SS-ESMP, per subproject; (ii) the C-ESMP, per civil works contract; (iii) the dam safety plans (Construction Supervision and Quality

Assurance Plan, Instrumentation Plan, Operation and Maintenance Plan, Emergency Preparedness Plan and Reservoir Refilling Plan), per dam; and (iv) the RP and EGEP, per subproject or per activity where required. Where a subproject is procured under more than one contract, the SS-ESIA and SS-ESMP shall be finalized and cleared before the first civil works procurement document for that subproject is issued.

25. Under the ESMF, the PMU (DOI) leads E&S risk management and quality control; the CMU (DWR) applies the ESMF to Sub-component 2.2 activities; and the PIUs in the Provincial Agriculture and Environment Offices (PAEO) of Vientiane Capital, Vientiane Province and Oudomxay (Vientiane Capital for Nam Houm; Vientiane Capital and Vientiane Province for Nam Suang; Oudomxay for Nam Hin) conduct day-to-day screening support, implementation, supervision and reporting at the subproject level. Detailed responsibilities are in Chapter 6 (Implementation Arrangements).

B. Scope

26. The ESMF applies to all WISER-supported subprojects and activities under Components 1 to 4. As detailed designs and some activities will be finalized during implementation, the ESMF guides the preparation of site-specific instruments once the location, scope and design of each activity are confirmed. The ESMF sets the content requirements for each of these instruments.

27. For the pre-selected two subprojects, Nam Houm - Nam Suang and Nam Hin, site-specific environmental and social instruments, including SS-ESIAs, SS-ESMPs, RPs, EGEPs, BMPs, CSQAPs, IPs, O&MPs, EPPs, and other relevant instruments, will be prepared during the detailed engineering design (DED) stage, consulted upon and disclosed in draft, finalized, cleared and disclosed before the civil works procurement documents for the relevant contract are issued, in accordance with Action 1.1(2) of the ESCP and the ESMF. The Project will also prepare Environmental Impact Assessments (EIAs) and obtain Environmental Compliance Certificates (ECCs), where required under the laws and regulations of Lao PDR.

C. Application of the ESMF

28. This ESMF applies to all Project components and all activities financed under the Project throughout the Project implementation period. It applies to all Project-financed technical assistance, feasibility studies, detailed engineering designs, institutional strengthening activities, capacity building, rehabilitation works, associated facilities, and operation and maintenance activities where applicable.

29. The ESMF shall be applied to:

- all Project-financed civil works, including rehabilitation of dams, reservoirs, irrigation conveyance systems, and associated infrastructure;
- all technical assistance, feasibility studies, detailed engineering designs, and other studies financed under the Project;
- associated facilities identified during Project implementation, in accordance with the ESF;
- contractors, subcontractors, supervision consultants, and other implementing entities involved in Project activities; and
- the preparation and implementation of all environmental and social instruments required under the ESCP and applicable ESSs.

30. For the Contingent Emergency Response Component (CERC), Project activities shall be implemented in accordance with the World Bank ESF. A CERC Environmental and Social Management Framework (CERC-ESMF) Addendum, or other environmental and social instruments as required, shall be prepared, consulted upon, disclosed, and adopted prior to implementation of CERC activities to ensure that environmental and social risks and impacts are appropriately assessed and managed in accordance with the applicable ESSs.

2. LEGAL AND REGULATORY FRAMEWORKS

2.1 National Dam Safety, Environmental and Social Legal Frameworks

31. Lao PDR has established a comprehensive legal and regulatory framework to manage environmental and social (E&S) risks associated with dam safety, irrigation development, water resources management, environmental protection, climate resilience, and sustainable development. The WISER Project, which focuses on rehabilitating existing irrigation dams and irrigation infrastructure, strengthening dam safety, improving water resources management, and enhancing institutional capacity, is supported by a range of national laws, decrees, technical guidelines, and sector policies.

32. Key legislation includes the **Law on Dam Safety No. 52/NA (2022)**, which establishes the legal and institutional framework for dam safety throughout the dam lifecycle, the **Law on Water and Water Resources No. 23/NA (2017)**, which governs the sustainable management, allocation, utilization, and protection of water resources, and **Decree No. 20/GOV (2021) on Reservoir and Reservoir Management**, which provides requirements for reservoir operation, monitoring, water allocation, and integrated watershed management. These are complemented by the **Law on Environmental Protection No. 53/NA (2024)** and the **Environmental Impact Assessment (EIA) Decree No. 389/GOL (2022)**, which establish the legal basis for environmental assessment, pollution prevention, environmental monitoring, and environmental compliance. The **Dam Safety Guidelines (2018)**, including the **Emergency Action Plan (EAP) Guidelines**, provide technical guidance for dam safety assessments, emergency preparedness, and dam operation and maintenance.

33. The **Land Law No. 70/NA (2019)** and the **Law on Resettlement and Occupation No. 86/NA (2018)** establish the legal framework for land acquisition, compensation, livelihood restoration, and resettlement, while other sectoral legislation governs irrigation management, labor and occupational safety, biodiversity conservation, public health, cultural heritage protection, stakeholder engagement, and the rights and participation of ethnic groups. Although the national legal framework is comprehensive, certain gaps remain in relation to the World Bank Environmental and Social Framework (ESF). These gaps and the corresponding measures adopted under this ESMF are discussed in **Section 2.3**.

34. A summary of the key national legal and regulatory instruments applicable to the WISER Project is presented in **Table 2-1 to Table** 2-4, organized by thematic area and aligned with the relevant Environmental and Social Standards (ESSs). The tables cover legislation related to dam safety and water resources management; environmental protection and biodiversity conservation; land acquisition, labor, occupational health and safety, community health and safety; and ethnic groups and cultural heritage, illustrating their relevance to the rehabilitation, operation, and management of irrigation dams and associated irrigation infrastructure under the WISER Project.

Table 2-1: Legal Frameworks Related to Dam Safety, Water Supply and Irrigation

Name of Legal Framework	▪ Objective	Relevance to WISER Project
Law on Dam Safety, No. 52/NA (2022)	Establishes the legal framework for dam safety throughout the dam lifecycle, including planning, design, construction, operation, maintenance, safety inspections, rehabilitation, emergency preparedness, decommissioning, and responsibilities of dam owners and government agencies. Articles 45–50 specifically	Primary legal basis for dam safety management under the WISER Project. Supports dam safety assessments, rehabilitation design, dam safety monitoring, Operation and Maintenance Plans (O&MPs), Emergency Preparedness Plans

Name of Legal Framework	▪ Objective	Relevance to WISER Project
	require the preparation, implementation, and periodic updating of Emergency Action Plans (EAPs).	(EPPs), emergency response, and institutional capacity building in accordance with ESS4.
Prime Minister Decision No. 68/PM (27 July 2020)	Establishes institutional arrangements and implementation mechanisms for dam safety management, including coordination among relevant ministries, provincial authorities, dam owners, and emergency response agencies.	Supports institutional coordination, dam safety oversight, emergency preparedness, incident reporting, and implementation of dam safety responsibilities for rehabilitated irrigation dams under the Project.
Dam Safety Guidelines (2018), including the Emergency Action Plan (EAP) Guidelines (December 2018)	Provide technical and procedural guidance for dam planning, design, construction, operation, inspection, monitoring, maintenance, risk assessment, emergency preparedness, dam breach analysis, inundation mapping, emergency response, evacuation planning, training, drills, and periodic review of Emergency Action Plans. The guidelines are intended for dam owners, operators, regulators, engineers, and other stakeholders to ensure the safety of people, infrastructure, and the environment.	Forms the national technical guidance for preparing and implementing dam safety instruments, including Dam Safety Assessments, O&MPs, EPPs, and Emergency Action Plans. Supports compliance with ESS4 and implementation of dam safety requirements for rehabilitated irrigation dams.
Law on Disaster Management, No. 71/NA (2019)	Establishes the national disaster risk management framework covering disaster prevention, preparedness, emergency response, recovery, institutional coordination, public participation, and disaster risk reduction.	Supports coordination between dam operators, provincial and district disaster management committees, emergency response agencies, and affected communities during dam-related emergencies or potential dam failures.
Law on Water and Water Resources, No. 23/NA (2017)	Promotes the sustainable development, allocation, utilization, conservation, protection, and management of water resources, recognizing water resources as State-managed national assets. The Law requires strategic planning, water quality standards, water use permits, a national water information system, and protection of water resources from pollution and harmful activities.	Supports integrated water resources management, reservoir operation, water allocation, environmental flow management, catchment protection, water quality management, and sustainable operation of rehabilitated irrigation dams and irrigation schemes under the Project.
Decree No. 20/GOV (2021) on Reservoir and Reservoir Management	Establishes the legal framework for reservoir management, including reservoir operation, water allocation, water quality management, monitoring, watershed management, reservoir safety, and integrated management of river basins and reservoirs.	Provides the legal basis for reservoir operation, monitoring, water allocation, reservoir safety, and integrated watershed management for rehabilitated irrigation reservoirs under the Project.
Law on Irrigation (2025)	Strengthens the legal framework for irrigation development, irrigation infrastructure management, irrigation service delivery, water use regulation, Water User Group management, and integration of dam safety into irrigation system management.	Supports rehabilitation, operation, and sustainable management of irrigation infrastructure, irrigation service delivery, Water User Groups (WUGs), and integration of dam safety into irrigation management under the Project.
Law on Meteorology and	Regulates hydrological and meteorological monitoring, forecasting, early warning systems,	Supports hydrological monitoring, inflow forecasting, flood forecasting,

Name of Legal Framework	▪ Objective	Relevance to WISER Project
Hydrology, No. 36/NA (2017)	and management of meteorological and hydrological data to support disaster risk reduction and water resources management.	reservoir operation, climate information, and early warning systems essential for safe operation of irrigation dams and emergency preparedness under the Project.

Table 2-2: Legal Frameworks Related to Environmental Protection and Biodiversity

Name of Legal Framework	Objective	Relevance to WISER Project
Law on Environmental Protection, No. 53/NA (2024)	Establishes the national legal framework for environmental protection in Lao PDR. It sets out principles, rights, and obligations for individuals, organizations, and government agencies to conserve natural resources, prevent pollution, protect environmental quality, promote sustainable development, and undertake environmental assessment, monitoring, and public participation.	Applies to all Project activities. Provides the legal basis for environmental assessment, pollution prevention, environmental monitoring, stakeholder engagement, environmental compliance, and implementation of mitigation measures during rehabilitation of irrigation dams and irrigation infrastructure.
Decree on Environmental Impact Assessment (EIA), No. 389/GOL (2022)	Sets the legal framework for managing environmental and social impacts of development projects in Lao PDR, outlining IEE/ESIA procedures, project risk categorization, public consultation, and environmental certification, all under MONRE's oversight. Article 9: IEE and EIA Classification: Group 1 – IEE and Group 2 – EIA. Art 11-18 outline the process and requirements for preparation and review of IEE Reports. Art 19-29 outline the process and requirements for preparation and review of EIA Reports. Art 45: Issuance of Environmental Compliance Certificate (ECC) for IEE and Art 46 is ECC for EIA.	Directly applicable to rehabilitation of irrigation dams and irrigation infrastructure. Guides preparation, review, approval, and implementation of IEEs/EIAs, ESMPs, public consultation, disclosure, issuance of ECCs, and environmental monitoring in accordance with national requirements.
Ministerial Instruction on the List of Investment Projects Requiring Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) (2023)	This updated list categorizes investment projects by sector and size, defining thresholds for mandatory IEE or EIA. It clarifies criteria for classification under Category 1 (EIA) – Article 3 and **Article 2 – Category 1 (IEE Required):** • (#6) Infrastructure investment projects: Construction of reservoirs for production or water supply with a storage capacity of **1–3 million m³ → IEE** **Article 3 – Category 2 (ESIA Required):** • (#6) Infrastructure investment projects: Construction of reservoirs for production or water supply with a storage capacity of more than **3 million m³ → ESIA**	Based on the current scope of the WISER Project, the rehabilitation of the Nam Houm, Nam Suang, and Nam Hin irrigation dams, all of which have reservoir storage capacities exceeding 3 million m³, is expected to require an EIA and issuance of an ECC by MAE in accordance with Article 3 (Category 2) of the Ministerial Instruction (2023).

Name of Legal Framework	Objective	Relevance to WISER Project
Law on Water and Water Resources, No. 23/NA (2017)	Establishes the legal framework for the protection, development, allocation, conservation, utilization, and management of water resources and river basins to ensure sustainable water use and environmental protection.	Supports integrated water resources management, reservoir operation, environmental flow management, water allocation, water quality protection, and sustainable operation of rehabilitated irrigation dams and irrigation schemes.
Law on Forestry, No. 08/NA (2019)	Provides for the protection, conservation, restoration, utilization, and sustainable management of forests, forest land, and ecosystem services, including protection, conservation, and production forests.	Relevant where rehabilitation works may affect forest land, riparian vegetation, or protected forest areas. Supports vegetation protection, erosion control, habitat restoration, and management of construction impacts on natural habitats.
Forest Management Decrees (No. 219/GOL, No. 01/GOL and No. 02/GOL)	Provide detailed regulations for implementation of the Forestry Law, including forest zoning, land use, forest utilization, conservation, and enforcement.	Supports environmental screening, avoidance of protected forest areas, management of vegetation clearance, and restoration of disturbed areas during Project implementation.
Law on Aquatic Animal and Fishery, No. 41/NA (2023)	Regulates the conservation, protection, development, and sustainable utilization of aquatic animals, fisheries resources, aquatic habitats, and water ecosystems, including protected aquatic areas.	Relevant to rehabilitation of dams, reservoirs, canals, and other water infrastructure that may affect aquatic habitats, fisheries resources, sedimentation, water quality, and environmental flows. Supports implementation of mitigation measures under ESS6.
Law on Wildlife and Aquatic Animals, No. 42/NA (2023)	Establishes measures for conservation and sustainable management of wildlife, aquatic animals, protected species, critical habitats, and biodiversity, including control of hunting and trade.	Supports biodiversity assessment and management of potential impacts on wildlife, aquatic species, natural habitats, and ecosystem services associated with rehabilitation of irrigation dams and irrigation systems.
Law on Land, No. 70/NA (2019) *(Environmental aspect)*	Establishes principles for sustainable land administration, land use planning, land protection, and prevention of land degradation.	Supports environmentally sustainable land use planning, management of borrow areas, spoil disposal, erosion control, and restoration of disturbed areas associated with construction activities.

Table 2-3: Legal Frameworks Related to Social Protection, Labor, and Community Health and Safety

Name of Legal Framework	Objective	Relevance to WISER Project
Law on Resettlement and Occupation, No. 086/NA (2018)	Establishes the legal framework for planning and implementing land acquisition, compensation, resettlement, livelihood restoration, and occupational rehabilitation to ensure affected persons are fairly compensated and their livelihoods are restored following development projects.	Relevant where Project activities result in permanent or temporary land acquisition, restrictions on land use, loss of assets, access restrictions, or economic displacement associated with rehabilitation of irrigation dams, reservoirs, canals, and associated infrastructure. Supports implementation of the RPF and RPs in accordance with ESS5.

Name of Legal Framework	Objective	Relevance to WISER Project
Labor Law (Amended), No. 43/NA (2018)	Regulates employment relationships, labor contracts, working conditions, occupational safety and health, wages, working hours, social protection, and labor dispute resolution.	Applies to all Project workers, including direct workers, contracted workers, and primary supply workers. Supports implementation of the LMP, fair working conditions, worker welfare, labor rights, and compliance with ESS2.
Law on Hygiene, Disease Prevention and Health Promotion, No. 73/NA (2019)	Promotes public health, disease prevention, occupational hygiene, sanitation, environmental health, and health promotion.	Relevant to worker health, sanitation, communicable disease prevention, worker camps, community health, and implementation of Community Health and Safety (CHS) measures during rehabilitation works.
Decree on Occupational Safety and Health, No. 22/GOL (2019)	Establishes employer responsibilities for providing safe and healthy workplaces, hazard prevention, occupational risk management, accident reporting, worker training, and monitoring of occupational safety and health.	Directly applicable to rehabilitation works involving dams, spillways, canals, reservoirs, excavation, concrete works, heavy equipment, confined spaces, and other high-risk construction activities. Supports implementation of OHS Management Plans under ESS2 and ESS4.
Law on Grievance Redress, No. 17/NA (2022)	Establishes the rights of individuals and organizations to submit complaints, seek resolution, and appeal administrative decisions through formal grievance mechanisms.	Supports establishment and operation of the Project Grievance Mechanism (GRM), Worker GRM, and procedures for addressing grievances related to land acquisition, construction impacts, irrigation service, labor issues, dam safety, and community concerns.
Law on Anti-Human Trafficking, No. 73/NA (2015)	Prevents and combats human trafficking, protects victims, and establishes measures to prevent forced labor, exploitation, and abuse.	Relevant to labor management, contractor recruitment, prevention of forced labor, labor exploitation, trafficking risks, and protection of vulnerable workers during Project implementation.
Law on Preventing and Combating Violence Against Women and Children (2014)	Provides legal protection against violence, abuse, exploitation, and discrimination against women and children and promotes gender equality.	Supports implementation of SEA/SH prevention measures, Codes of Conduct, worker awareness, and protection of women, children, and vulnerable groups during Project implementation in accordance with ESS2, ESS4, and ESS10.
Law on the Protection of Children's Rights and Interests, No. 43/NA (2023)	Protects the rights, welfare, health, education, and development of children and safeguards them from abuse, exploitation, neglect, hazardous work, and violence.	Relevant to prevention of child labor, protection of children from construction hazards, reservoir and canal safety risks, traffic hazards, and other community health and safety risks associated with Project activities.
Law on Prevention and Control of HIV/AIDS, No. 59/NA (2024)	Provides measures to prevent and control HIV/AIDS, protect the rights of people living with HIV/AIDS, promote awareness, treatment, and eliminate discrimination.	Supports worker and community health programs, HIV/AIDS awareness, communicable disease prevention, non-discrimination, and health education, particularly where labor influx and worker camps are established.
Law on Gender Equality, No. 07/NA (2019)	Promotes equal rights, opportunities, and participation of women and men in political, economic, social, and cultural development and prohibits gender discrimination.	Supports inclusive stakeholder engagement, equal employment opportunities, participation of women in Water User Groups (WUGs), gender-responsive consultation, and implementation of gender-related

Name of Legal Framework	Objective	Relevance to WISER Project
		commitments under ESS1, ESS2, ESS5, ESS7, and ESS10.

Table 2-4: Legal Frameworks Related to Ethnic Groups and Cultural Heritage

Name of Legal Framework	Objective	Relevance to WISER Project
Constitution of the Lao PDR, No. 77/NA (2025)	Guarantees equality among all ethnic groups, protects their rights, customs, traditions, cultures, and languages, and promotes their participation in national socio-economic development.	Provides the constitutional basis for non-discrimination, equal participation, culturally appropriate consultation, and equitable sharing of Project benefits among all ethnic groups affected by or benefiting from rehabilitation of irrigation dams and irrigation systems.
Ethnic Minority Policy (1992)	Promotes national unity, equal development opportunities, and improvement of the socio-economic conditions of all ethnic groups while preserving their cultural identity, traditions, customs, and livelihoods.	Supports culturally appropriate engagement with ethnic communities and ensures that Project planning, implementation, operation, and benefit sharing respect the cultural values and development priorities of ethnic groups, consistent with ESS7.
Guidelines on Consultation with Ethnic Groups (2013)	Establish procedures for conducting free, prior, and informed consultations with ethnic groups in a culturally appropriate, inclusive, and gender-responsive manner throughout the project cycle.	Provides guidance for stakeholder engagement with ethnic groups during environmental and social assessment, preparation of EGEPs, implementation of rehabilitation works, operation of irrigation schemes, and establishment or strengthening of Water User Groups (WUGs), consistent with ESS7.
Law on National Heritage, No. 11/NA (2021)	Protects, conserves, manages, and promotes tangible and intangible cultural heritage, including archaeological sites, historical monuments, religious sites, cemeteries, sacred places, and cultural landscapes.	Relevant where Project activities may affect cultural heritage resources, including temples, cemeteries, sacred sites, and other places of cultural significance located within or near irrigation dams, reservoirs, canals, or associated infrastructure. Supports implementation of ESS8 and Cultural Heritage Management Measures.
Presidential Decree on Heritage Conservation, No. 03/Lao PDR (1997)	Establishes the legal framework for conservation, protection, restoration, and sustainable management of national cultural heritage resources.	Supports protection and management of cultural heritage resources during Project implementation, including avoidance of impacts where feasible, culturally appropriate consultation, and implementation of Chance Find Procedures during construction.
Law on Lao Front for National Development, No. 49/NA (2018)	Defines the roles and responsibilities of the Lao Front for National Development (LFND) in promoting national unity, protecting the rights and interests of ethnic groups, and facilitating their participation in national development.	Supports inclusive stakeholder engagement, culturally appropriate consultation, grievance resolution, and coordination with ethnic communities through the LFND during preparation and implementation of Project activities, particularly where ethnic groups are present.

2.2 World Bank's Environmental and Social Standards (ESS)

35. The WISER Project is financed by the World Bank and therefore applies the World Bank Environmental and Social Framework (ESF). The ESF establishes the objectives, requirements, and principles of the Environmental and Social Standards (ESSs) applicable to the Project. The Borrower is required to apply the relevant ESSs to identify, assess, manage, and monitor the environmental and social

risks and impacts associated with Project activities, in conjunction with the applicable laws and regulations of the Lao PDR.

36. The ESSs are intended to ensure that environmental and social risks and impacts associated with the rehabilitation of irrigation dams, reservoirs, irrigation infrastructure, and related technical assistance activities are appropriately identified, assessed, avoided, minimized, mitigated, or managed throughout the Project lifecycle. This Environmental and Social Management Framework (ESMF) has been prepared in accordance with the requirements of the World Bank ESF, the applicable ESSs, and the relevant legal and regulatory framework of the Lao PDR.

37. **Table 2-5** summarizes the Environmental and Social Standards (ESSs) applicable to the WISER Project and explains their relevance to the Project activities, including dam safety, irrigation infrastructure rehabilitation, water resources management, environmental protection, biodiversity conservation, land acquisition and resettlement, labor and working conditions, community health and safety, stakeholder engagement, and protection of ethnic groups and cultural heritage.

Table 2-5: Applicable World Bank Environmental and Social Standards (ESSs)

WB's ESS	Relevance to WISER Project Activities
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	**ESS1 is relevant** because the WISER Project will finance rehabilitation of existing irrigation dams, reservoirs, irrigation systems, and technical assistance activities that may generate environmental and social risks and impacts. Key risks include land acquisition, temporary and permanent economic displacement, impacts on downstream water users, occupational and community health and safety, dam safety, labor influx, SEA/SH risks, biodiversity impacts, impacts on ethnic groups, and cultural heritage. The Borrower has prepared the Environmental and Social Commitment Plan (ESCP), Environmental and Social Management Framework (ESMF), Stakeholder Engagement Plan (SEP), Labor Management Procedures (LMP), Resettlement Policy Framework (RPF), and Ethnic Group Engagement Framework (EGEF) to guide environmental and social risk management. The ESMF establishes procedures for environmental and social screening, risk classification, preparation of site-specific Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs), Resettlement Plans (RPs), Ethnic Group Engagement Plans (EGEPs), Biodiversity Management Plans (BMPs), and Emergency Preparedness Plans (EPPs), and other site-specific instruments, as required.
ESS2: Labor and Working Conditions	**ESS2 is relevant** because the Project will engage direct workers, contracted workers, primary supply workers, and community workers during project preparation, construction, supervision, operation, and maintenance. Key labor risks include occupational health and safety hazards associated with dam rehabilitation, excavation, heavy machinery, confined spaces, working at height, and electrical works, together with risks related to SEA/SH, child labor, forced labor, discrimination, and labor influx. The Labor Management Procedures (LMP) establish requirements for fair treatment, worker grievance mechanisms, occupational health and safety, Codes of Conduct, worker accommodation, and contractor management consistent with ESS2.
ESS3: Resource Efficiency and Pollution Prevention and Management	**ESS3 is relevant** because rehabilitation activities may generate construction waste, spoil, wastewater, sediment-laden runoff, dust, noise, equipment emissions, and risks associated with fuels, lubricants, hazardous materials, and construction material extraction. Improved irrigation may also increase

WB's ESS	Relevance to WISER Project Activities
	cropping intensity and the use of fertilizers, pesticides, and other agrochemicals. The Project will screen these indirect effects. Where screening identifies material risks, the site-specific environmental and social assessment will evaluate them, and the site-specific ESMP will set out proportionate mitigation and monitoring measures, drawing on relevant Lao Good Agricultural Practices (GAP) guidelines and integrated pest management principles, as applicable. Site-specific ESMPs will include measures for efficient use of water, energy, and materials, waste management, pollution prevention, erosion and sediment control, hazardous materials management, environmental flow management, water balance assessment, and restoration of disturbed areas.
ESS4: Community Health and Safety	**ESS4 is relevant** because rehabilitation of irrigation dams and associated infrastructure may pose risks to surrounding communities from construction activities, traffic, labor influx, communicable diseases, restricted access, emergency situations, and dam safety. The Project will also address risks associated with reservoir operation, structural stability, spillway adequacy, seepage, sedimentation, downstream flooding, and climate change. Dam safety requirements under **ESS4 Annex 1** will be applied, including engagement of qualified dam safety specialists, preparation of Construction Supervision and Quality Assurance Plan (CSQAP), Instrumentation Plans (IPs), Operation and Maintenance Plans (O&MPs), Emergency Preparedness Plans (EPPs), emergency response arrangements, and downstream community protection measures.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	**ESS5 is relevant** because rehabilitation works may require permanent or temporary land acquisition, restrictions on land use, and cause economic displacement. A Resettlement Policy Framework (RPF) has been prepared to guide resettlement planning where impacts are not yet known, while site-specific Resettlement Plans (RPs) will be prepared where required. compensation and assistance shall be provided before taking possession of affected land or assets, clearing affected land, or starting works in the affected area. Livelihood restoration shall start in time to address disruption and continue in accordance with the approved RP in accordance with ESS5.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	**ESS6 is relevant** as the rehabilitation of existing irrigation dams and associated infrastructure may cause localized impacts on biodiversity and aquatic ecosystems, including habitat disturbance, changes in water quality and sedimentation, loss of riparian vegetation, and potential impacts on fish habitats and aquatic connectivity. Reservoir drawdown and changes in downstream water flows may also affect aquatic habitats and ecosystem services. In addition, Nam Houm Reservoir is located approximately 4 km from Phou Phanang Protected Area. Therefore, biodiversity risks and impacts will be assessed during the preparation of site-specific Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs), including screening for natural and critical habitats and potential impacts on protected areas in accordance with ESS6. Measures to avoid, minimize, restore and, where appropriate, offset biodiversity impacts will be applied in accordance with the mitigation hierarchy. Where significant biodiversity risks are identified, a site-specific Biodiversity Management Plan (BMP) will be prepared and implemented.

WB's ESS	Relevance to WISER Project Activities
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	**ESS7 is relevant** because ethnic groups meeting the requirements of ESS7 are present in several Project areas and may be affected by rehabilitation activities. The Project has prepared an Ethnic Group Engagement Framework (EGEF), and Ethnic Group Engagement Plans (EGEPs) will be prepared where required to ensure culturally appropriate consultation, equitable access to project benefits, protection of cultural values, and effective grievance redress.
ESS8: Cultural Heritage	**ESS8 is relevant** because rehabilitation activities may affect known cultural heritage resources, including temples, cemeteries, sacred sites, and other places of cultural significance. Site-specific ESMPs will include cultural heritage management measures and Chance Find Procedures. Where avoidance is not feasible, culturally appropriate consultation will be undertaken with affected communities and relevant authorities to identify acceptable mitigation measures consistent with ESS8.
ESS10: Stakeholder Engagement and Information Disclosure	**ESS10 is relevant** because the Project involves a wide range of stakeholders, including government agencies, Water User Groups (WUGs), local communities, downstream water users, ethnic groups, women, vulnerable households, and project workers. A Stakeholder Engagement Plan (SEP) has been prepared to guide meaningful consultation, information disclosure, stakeholder participation, and operation of a Project Grievance Redress Mechanism (GRM), including SEA/SH-sensitive procedures and a Worker GRM. Engagement activities will be conducted throughout the Project lifecycle in a culturally appropriate, inclusive, and gender-responsive manner.

2.2.1 World Bank Dam Safety Requirements

38. As the Project involves rehabilitation of existing irrigation dams, the dam safety requirements under ESS4 Annex 1 will apply, taking into account the nature and significance of the proposed works and associated risks. The three existing project dams (Nam Houm, Nam Suang and Nam Hin) are rated High risk under ICOLD criteria. The Project will implement the dam safety requirements of ESS4 Annex 1, including independent review by the Panel of Experts (PoE), in accordance with Action 4.5 of the ESCP and with reference to the World Bank Good Practice Note on Dam Safety.

39. Given the high risk rating of each dam, the Project shall prepare and implement as a minimum the following: Construction Supervision and Quality Assurance Plan (CSQAP), an Instrumentation Plan (IP), a Potential Failure Modes Analysis, a Dam Breach Analysis with downstream inundation mapping, an Operation and Maintenance Plan (O&MP), and an Emergency Preparedness Plan (EPP) (together, the Dam Safety Plans).

40. The timing is as follows: (a) a preliminary O&MP (Annex 5) and an EPP Framework (Annex 4) shall be prepared before appraisal; (b) the CSQAP shall be incorporated into the bidding documents, and the Instrumentation Plan into the design, before the rehabilitation works are tendered; (c) the Potential Failure Modes Analysis shall be completed before the final design, and the Dam Breach Analysis before the EPP is finalized; (d) the final O&MP shall be adopted at least six months before completion of works, and the final EPP at least twelve months before completion of works; (e) written Panel of Experts clearance shall be obtained, before any reservoir filling or re-impoundment begins. The DED Consultant shall prepare the Dam Safety Plans. The PMU, the E&S Consultant (Firm) and the Panel of Experts shall review them, and the dam owner shall adopt and implement them.

41. Although Nam Houm and Nam Suang are treated as one subproject for environmental and social purposes (because of their proximity and shared downstream area), they are separate dam structures

with different designs, safety conditions and downstream risk. A separate set of dam safety plans will therefore be prepared for each of the three dams, so that the plans reflect the specific characteristics of each dam. Dam safety plans are not a substitute for the site-specific ESIA and ESMP and will be cross-referenced to them. The DED Consultant will be responsible for the preparation of these plans. They will be reviewed by the PMU, the E&S Consultant (Firm) and the PoE, and submitted to the World Bank for review.

2.3 Analysis of Gaps between the World Bank ESS and National Laws and Regulations

42. The Lao PDR has established a comprehensive legal and regulatory framework governing the assessment and management of environmental and social risks and impacts associated with development projects. These laws and regulations apply to both public and private investment projects and include legislation, decrees, decisions, ministerial instructions, and technical guidelines covering environmental protection, dam safety, water resources management, irrigation development, biodiversity conservation, labor and working conditions, land acquisition and resettlement, ethnic groups, stakeholder engagement, cultural heritage, and community health and safety.

43. While the Government of Lao PDR's legal framework is broadly consistent with the objectives of the World Bank Environmental and Social Framework (ESF), certain gaps remain with respect to procedural requirements, technical standards, institutional responsibilities, implementation capacity, and enforcement. These gaps are particularly evident in areas such as stakeholder engagement, biodiversity management, dam safety management throughout the project lifecycle, environmental and social risk management, labor management, grievance mechanisms, customary land rights, protection of vulnerable groups, and cumulative impact assessment.

44. **Table 2-6** presents a comparison between the relevant legal and regulatory framework of Lao PDR and the applicable World Bank Environmental and Social Standards (ESSs) for the WISER Project. The table identifies the principal gaps between national requirements and the ESF and proposes measures to address these gaps through the implementation of this Environmental and Social Management Framework (ESMF), the Environmental and Social Commitment Plan (ESCP), and other environmental and social instruments prepared under the Project.

Table 2-6: Gap Analysis of Legislative and Regulatory Framework of Lao PDR vs. World Bank ESSs

WB ESS	World Bank Requirements	Government of Lao PDR Requirements	Key Gaps	Measures under the WISER Project
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts	Requires environmental and social assessment, Environmental and Social Management Framework (ESMF), site-specific ESIAs and ESMPs, stakeholder engagement, ESCP, monitoring and reporting	Environmental Protection Law (2024); EIA Decree No. 389/GOL (2022); Ministerial Instruction on Project Categorization (2023) require IEE/EIA, stakeholder consultation, environmental	National legislation focuses on project approval and environmental compliance but provides limited requirements on ESCP, institutional capacity assessment, adaptive management, systematic monitoring and reporting, and	Prepare and implement the ESMF, ESCP, SEP, LMP, RPF and EGEF; undertake environmental and social screening; prepare site-specific Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs), Resettlement Plans

WB ESS	World Bank Requirements	Government of Lao PDR Requirements	Key Gaps	Measures under the WISER Project
	throughout the project lifecycle.	monitoring, and Environmental Compliance Certificates (ECCs).	project-wide environmental and social management frameworks.	(RPs), Ethnic Group Engagement Plans (EGEPs), Biodiversity Management Plans (BMPs), Emergency Preparedness Plans (EPPs), and other required instruments; strengthen institutional capacity; and implement regular monitoring and reporting.
ESS2 – Labor and Working Conditions	Requires fair labor practices, Labor Management Procedures (LMP), occupational health and safety, prohibition of child and forced labor, worker grievance mechanism, Codes of Conduct, and SEA/SH risk management.	Labor Law (2018); Decree on Occupational Safety and Health No. 22/GOL (2019); Law on Hygiene, Disease Prevention and Health Promotion (2019).	National legislation provides labor and OHS requirements but has limited provisions on worker grievance mechanisms, contractor labor management, SEA/SH risk management, Codes of Conduct, and labor monitoring.	Implement the LMP, Worker Grievance Mechanism, OHS Management Plans, Codes of Conduct, contractor labor management procedures, worker training, PPE, emergency preparedness, and regular labor compliance monitoring.
ESS3 – Resource Efficiency and Pollution Prevention and Management	Requires efficient use of water, energy, and materials, pollution prevention, waste management, hazardous materials management, environmental flow management, and climate-resilient resource use.	Environmental Protection Law (2024); EIA Decree (2022); Water and Water Resources Law (2017); pollution control regulations.	Limited requirements for resource efficiency, greenhouse gas consideration, environmental flow assessment, hazardous waste tracking, and integrated pollution prevention.	Site-specific ESMPs and C-ESMPs will include measures for efficient use of water, energy, and materials; waste management; pollution prevention; hazardous materials management; erosion and sediment control; environmental flow assessment; water balance analysis; and restoration of disturbed areas.
ESS4 – Community Health and Safety	Requires assessment and management of community health and safety risks, traffic safety, labor influx, emergency preparedness, SEA/SH risks, climate resilience, and **dam safety in**	Law on Dam Safety (2022); Law on Disaster Management (2019); Law on Water and Water Resources (2017); Decree on Reservoir and Reservoir Management	National legislation provides dam safety and emergency management requirements but does not fully integrate community health and safety, climate change considerations,	Prepare and implement Dam Safety Assessments, O&MPs, EPPs, IPs, CSQAPs, , traffic management measures, community health and safety measures, emergency response procedures, and downstream

WB ESS	World Bank Requirements	Government of Lao PDR Requirements	Key Gaps	Measures under the WISER Project
	accordance with ESS4 Annex 1.	(2021); Dam Safety Guidelines (2018).	stakeholder engagement, or downstream community risk management throughout the project lifecycle.	community protection measures as part of the ESMPs and dam safety instruments.
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Avoid or minimize land acquisition; provide compensation at replacement cost; restore livelihoods; support vulnerable groups; establish grievance mechanisms.	Land Law (2019); Law on Resettlement and Occupation (2018).	National legislation provides compensation and resettlement procedures but has limited provisions for livelihood restoration, informal land users, vulnerable groups, and monitoring of resettlement outcomes.	Prepare and implement the RPF and site-specific RPs; provide compensation at replacement cost; restore livelihoods; monitor implementation; and ensure compensation is completed before commencement of civil works.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Requires application of the mitigation hierarchy, protection of natural and critical habitats, biodiversity assessment, ecosystem services assessment, and Biodiversity Management Plans where required.	Forestry Law (2019); Law on Aquatic Animal and Fishery (2023); Law on Wildlife and Aquatic Animals (2023); Environmental Protection Law (2024).	National legislation provides biodiversity protection but does not specifically address critical habitats, ecosystem services, biodiversity offsets, or application of the mitigation hierarchy.	Conduct biodiversity screening under the ESMF; undertake site-specific biodiversity assessments where required; prepare BMPs where significant impacts are identified; and apply the mitigation hierarchy.
ESS7 – Indigenous Peoples / Ethnic Groups	Requires culturally appropriate consultation, equitable benefit sharing, preparation of EGEPs, and Free, Prior and Informed Consent (FPIC) where applicable.	Constitution (2025); Ethnic Minority Policy (1992); Guidelines on Consultation with Ethnic Groups (2013); Law on Lao Front for National Development (2018).	National legislation promotes consultation and participation but does not require FPIC or preparation of project-specific ethnic group engagement plans.	Implement the EGEF and prepare EGEPs where required; conduct culturally appropriate consultations; ensure equitable access to project benefits; establish culturally appropriate grievance mechanisms; and apply FPIC where required under ESS7.
ESS8 – Cultural Heritage	Requires protection of tangible and intangible cultural heritage, assessment of	Law on National Heritage (2021); Presidential Decree on Heritage	National legislation protects cultural heritage but provides limited guidance on chance finds, intangible	Include Cultural Heritage Management Measures and Chance Find Procedures in site-specific ESMPs;

WB ESS	World Bank Requirements	Government of Lao PDR Requirements	Key Gaps	Measures under the WISER Project
	impacts, consultation with affected communities, and implementation of Chance Find Procedures.	Conservation (1997).	heritage, and project-specific cultural heritage management planning.	undertake culturally appropriate consultation where known cultural heritage may be affected; and implement additional mitigation measures where required.
ESS10 – Stakeholder Engagement and Information Disclosure	Requires Stakeholder Engagement Plan (SEP), continuous stakeholder engagement, accessible information disclosure, project-level grievance mechanisms, and inclusive consultation.	Environmental Protection Law (2024); EIA Decree (2022); Law on Grievance Redress (2022); Guidelines on Consultation with Ethnic Groups (2013).	National legislation requires consultation during environmental assessment but does not require a project-wide SEP, continuous stakeholder engagement, or project-specific grievance mechanisms throughout implementation.	Prepare and implement the SEP; establish Project and Worker GRMs, including SEA/SH-sensitive procedures; undertake continuous stakeholder engagement; disclose environmental and social information throughout the Project lifecycle; and ensure inclusive participation of women, ethnic groups, Water User Groups (WUGs), and vulnerable communities.

2.4 Environmental, Health and Safety (EHS) Guidelines of the World Bank

45. The WISER Project is financed by the World Bank and is therefore subject to the application of the World Bank Group's Environmental, Health, and Safety (EHS) Guidelines. The EHS Guidelines represent internationally recognized Good International Industry Practice (GIIP) for managing environmental, occupational health and safety, and community health and safety risks associated with development projects. The Guidelines comprise the General EHS Guidelines (2007) together with relevant Industry Sector EHS Guidelines applicable to the Project. These guidelines are implemented in conjunction with the applicable legal and regulatory framework of the Lao PDR, including the Law on Dam Safety (2022), Law on Water and Water Resources (2017), Decree on Reservoir and Reservoir Management (2021), Environmental Protection Law (2024), and Environmental Impact Assessment Decree (2022).

46. For the WISER Project, the following World Bank Group EHS Guidelines are particularly relevant:

- **General EHS Guidelines (2007):** Applicable to all Project activities, including rehabilitation of irrigation dams, reservoirs, irrigation systems, and associated infrastructure. The Guidelines cover environmental management, air quality, noise, water quality, waste management,

hazardous materials management, occupational health and safety, community health and safety, construction management, emergency preparedness and response, and decommissioning.

- **Sector-Specific EHS Guidelines (as applicable):**
    - **Water and Sanitation:** Applicable to worker camps, site offices, and temporary construction facilities to ensure adequate water supply, sanitation, wastewater management, and hygiene consistent with ESS2 and ESS4.
    - **Construction Materials Extraction:** Applicable where quarries, borrow pits, or construction material sources are used for rehabilitation works, providing guidance on environmental management, worker safety, and site restoration.
    - **Occupational Health and Safety (OHS):** Applicable to all rehabilitation works involving dams, spillways, reservoirs, canals, pipelines, excavation, concrete works, electrical and mechanical equipment, confined spaces, and heavy machinery. The Guidelines include requirements for hazard identification, Personal Protective Equipment (PPE), first aid, emergency response, worker training, and health surveillance.
    - **Construction and Decommissioning:** Applicable to rehabilitation of irrigation dams, reservoirs, spillways, canals, hydraulic structures, access roads, and other associated infrastructure. Covers erosion and sediment control, dust and noise management, traffic management, waste management, site restoration, and construction safety.
    - **Dam Safety and Emergency Preparedness:** Although the World Bank Group does not publish a standalone EHS Guideline for dam safety, the Project will apply Good International Industry Practice (GIIP) together with the requirements of ESS4 Annex 1, the World Bank Good Practice Note on Dam Safety, and relevant national dam safety legislation and technical guidelines. These requirements cover dam safety assessments, structural inspections, instrumentation and monitoring, Operation and Maintenance Plans (O&MPs), Emergency Preparedness Plans (EPPs), dam safety monitoring, emergency response, and downstream community protection.

47. Good International Industry Practice (GIIP), as referenced in the World Bank ESF, includes internationally recognized engineering practices, standards, and technical guidance that are generally accepted as effective and appropriate for managing environmental and social risks. For the WISER Project, GIIP is particularly important for dam safety, including dam rehabilitation, structural stability assessment, spillway capacity evaluation, reservoir operation, emergency preparedness, instrumentation and monitoring, climate resilience, and protection of downstream communities.

48. Implementation under the WISER Project will include:

- **Integration into Procurement:** Procurement documents, bidding documents, civil works contracts, and supervision consultancy contracts will include requirements for compliance with the applicable World Bank EHS Guidelines, ESSs, GIIP, and national dam safety requirements.
- **Site-Specific Environmental and Social Management:** Contractors will prepare and implement **Contractor Environmental and Social Management Plans (C-ESMPs)**, including Occupational Health and Safety (OHS) Management Plans, Traffic Management Plans (TMPs),

Waste Management Plans (WMPs), Emergency Preparedness Plans (EPPs), Dam Safety Management Measures, and other site-specific management plans, as applicable.

- **Capacity Building and Training:** The Project Management Unit (PMU), Provincial Project Implementation Units (PIUs), supervision consultants, contractors, Water User Groups (WUGs), and relevant government agencies will receive training on the implementation of the World Bank ESF, EHS Guidelines, dam safety requirements, emergency preparedness, occupational health and safety, community health and safety, and environmental and social management.
- **Monitoring and Supervision:** The PMU, PIUs, Independent Environmental and Social Monitoring Consultant (for Component 2), and Implementation Support and Works Supervision Consultant (ISWS) will monitor contractor compliance with the applicable EHS Guidelines, GIIP, ESSs, national regulations, and approved environmental and social management instruments through regular inspections, monitoring, reporting, and corrective actions.

49. Where differences exist between the national legal framework and the World Bank Group EHS Guidelines or other applicable Good International Industry Practice, the more stringent requirement shall apply to ensure adequate protection of workers, affected communities, biodiversity, cultural heritage, water resources, and the long-term safety and resilience of rehabilitated irrigation dams and associated infrastructure.

3. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

This chapter provides an overview of the environmental and social baseline conditions in the areas of the three proposed WISER dam rehabilitation subprojects: Nam Houm, Nam Suang and Nam Hin. Nam Houm and Nam Suang are located in Naxaythong District, Vientiane Capital, while Nam Hin is located in Xay (Muangxay) District, Oudomxay Province.

The baseline information is drawn from available secondary sources, previous studies and information collected during Project preparation. As the feasibility studies and detailed engineering designs are not yet finalized, the information presented in this chapter is preliminary and provides a general description of the Project areas. More detailed baseline information will be collected and verified during the preparation of the site-specific Environmental and Social Impact Assessments (SS-ESIAs), taking into account the proposed rehabilitation works and their areas of influence.

3.1 Environmental Baseline Conditions

Lao PDR is predominantly mountainous, with extensive river networks, forested watersheds, agricultural land and wetlands. The country has a tropical monsoon climate characterized by distinct wet and dry seasons. Rainfall is concentrated during the wet season, generally from May to October, while the dry season extends from November to April. Rivers, reservoirs and irrigation systems play an important role in agricultural production, fisheries, domestic water use and rural livelihoods.

The three proposed WISER subprojects are situated in two different geographical settings. Nam Houm and Nam Suang are located in the relatively low-lying agricultural landscape of Vientiane Capital, while Nam Hin is located in the mountainous terrain of Oudomxay Province. The physical characteristics of these areas are summarized below.

Vientiane Capital – Nam Houm and Nam Suang

Nam Houm and Nam Suang reservoirs are located in Naxaythong District, on the outskirts of Vientiane Capital. The district comprises lowland agricultural areas, gently undulating terrain and forested or partially forested upland catchments. Land use includes irrigated paddy fields, other agricultural land, settlements, forest and bamboo areas, reservoirs, canals and fishponds.

The two reservoirs form part of existing irrigation systems that provide water for agricultural production, particularly during the dry season. They also support fisheries and aquaculture activities. Water availability varies seasonally, depending on rainfall, reservoir storage and irrigation demand.

The soils in the lowland agricultural areas generally comprise alluvial and clay-rich soils suitable for paddy cultivation, while more weathered soils occur in the surrounding upland areas. The condition of soils, water resources and drainage systems varies according to land use and local topography.

The climate is characterized by hot temperatures and seasonal rainfall. The wet season provides most of the annual rainfall, while the dry season is associated with lower water availability and increased dependence on reservoir storage for irrigation. Existing air quality and noise conditions are influenced by agricultural activities, road traffic, household activities and seasonal biomass burning. However, site-specific monitoring data for the proposed construction areas are limited.

Oudomxay Province – Nam Hin

Nam Hin Reservoir is located in Xay (Muangxay) District, Oudomxay Province, in northern Lao PDR. The province is predominantly mountainous, with steep slopes, river valleys, agricultural land and forested landscapes. Muangxay is the provincial administrative and commercial centre, surrounded by rural communities and agricultural areas.

The Nam Hin catchment comprises mountainous and undulating terrain, with agricultural land and settlements concentrated along valleys and lower slopes. Land use includes paddy fields, upland agriculture, secondary forest, plantations, settlements and reservoir-related infrastructure.

The Nam Hin Reservoir forms part of the local water resources system and supports agricultural and other water-dependent activities. Water availability is influenced by seasonal rainfall, catchment runoff and reservoir storage. The mountainous terrain also contributes to variations in surface runoff and sediment transport.

Oudomxay has a tropical monsoon climate, with rainfall concentrated during the wet season and relatively cooler conditions during the dry season compared with Vientiane Capital. Air quality and noise conditions in rural areas are generally influenced by road traffic, agricultural activities, household activities and seasonal burning. Site-specific environmental monitoring information for the Nam Hin rehabilitation area remains limited.

However, detailed information on current water quality, soil conditions, sediment characteristics, ambient air quality, noise levels and other environmental parameters within the proposed construction areas is limited.

These baseline conditions will be further assessed during the preparation of the SS-ESIAs. Additional field investigations and monitoring will be undertaken where necessary, based on the nature and location of the proposed rehabilitation works and the potential environmental and social risks.

3.2 Biological Environment

Lao PDR supports diverse terrestrial and aquatic ecosystems, including tropical forests, wetlands, rivers, reservoirs and agricultural landscapes. Forests and other natural vegetation provide habitats for wildlife and contribute to watershed protection, while rivers and reservoirs support fish populations and other aquatic organisms.

The WISER subprojects are located in landscapes comprising both natural and modified habitats. The existing reservoirs and associated waterways also provide aquatic habitats and support local fisheries.

Vientiane Capital – Nam Houm and Nam Suang

The Nam Houm and Nam Suang catchments comprise a mixture of forest, bamboo, agricultural land, settlements and reservoir habitats. Historical land-cover mapping of the Nam Houm watershed in 2006 identified mixed deciduous forest, degraded forest, bamboo, shifting cultivation, paddy fields and water bodies as the principal land-cover categories. These findings provide historical information on the watershed but may not reflect current conditions.

Nam Houm Reservoir is located approximately 4 km from Phou Phanang Protected Area. The protected area contains forest habitats and has historically been associated with a range of terrestrial wildlife. However, available information does not confirm the current presence or distribution of threatened or protected species within the Nam Houm rehabilitation area.

The Nam Houm and Nam Suang reservoirs support capture fisheries and aquaculture activities. Previous fisheries studies have documented the importance of these reservoirs for local fishing and fish marketing. Studies of Nam Suang Reservoir have also identified aquatic habitats associated with fish feeding and spawning.

Although previous studies provide information on the aquatic environment, current site-specific information on fish species composition, aquatic habitat conditions and the presence of threatened or protected species remains limited.

Oudomxay Province – Nam Hin

The Nam Hin catchment is located within the mountainous landscape of Oudomxay Province, where vegetation includes forest, secondary vegetation, agricultural land and other modified habitats. Forest and riparian vegetation contribute to the ecological characteristics of the catchment and provide habitats for terrestrial wildlife.

The reservoir, tributaries and downstream waterways also provide aquatic habitats. These water bodies are used for fishing and other livelihood activities by nearby communities.

Available information on terrestrial and aquatic biodiversity within the Nam Hin rehabilitation area is limited. In particular, current information on habitat conditions, fish species composition and the presence of threatened or protected species has not been sufficiently established through site-specific surveys.

The SS-ESIAs will further assess terrestrial and aquatic biodiversity, including the identification of modified and natural habitats, screening for potential critical habitat in accordance with ESS6, and verification of threatened or protected species where relevant. Additional ecological surveys will be undertaken as appropriate, based on existing information and the potential impacts of the proposed activities.

3.3 Social and Socioeconomic Baseline Conditions

Lao PDR has a diverse population comprising numerous ethnic groups with different languages, cultural practices and livelihood systems. Agriculture remains an important source of employment and household income, particularly in rural areas. Access to land, water, forests and other natural resources plays an important role in supporting rural livelihoods.

The WISER subprojects are located in areas where communities depend on irrigation infrastructure and reservoir water for agricultural production and other activities. The social and socioeconomic characteristics of the project areas differ between Vientiane Capital and Oudomxay Province.

Vientiane Capital – Nam Houm and Nam Suang

Nam Houm and Nam Suang are located in Naxaythong District, a predominantly agricultural district on the outskirts of Vientiane Capital. According to the 2015 Population and Housing Census, the district had approximately 75,228 residents. A World Bank small-area estimate placed the population at approximately 84,096 in 2018. These figures are historical and do not represent the current population of communities potentially affected by the subprojects.

The district comprises communities with diverse socioeconomic backgrounds. The Lao-Tai population is prominent in the lowland areas, while other ethnic groups, including Hmong, Khmu and Yao, are also reported in the district. However, the ethnic composition of villages potentially affected by the rehabilitation works requires further verification.

Agriculture is an important source of livelihoods, particularly rice cultivation, vegetable production and livestock raising. The existing irrigation systems provide water for wet- and dry-season agricultural production. Reservoir fisheries, aquaculture and fish trading also contribute to household livelihoods and local economic activities.

The proximity of Naxaythong District to Vientiane Capital provides opportunities for non-agricultural employment, including trade, transport, construction and services. Nevertheless, many rural households continue to depend on agricultural land, irrigation water and natural resources.

Land use in the subproject areas includes agricultural land, settlements, reservoir and canal infrastructure, fishponds and other productive land. Land tenure arrangements may include formal land-use rights, customary use and other forms of land access. Detailed information on land ownership, users and potentially affected assets within the proposed rehabilitation areas remains to be verified.

Oudomxay Province – Nam Hin

Nam Hin is located in Xay (Muangxay) District, the administrative and economic centre of Oudomxay Province. The district comprises urban, peri-urban and rural communities, with livelihoods based on agriculture, trade, services and natural-resource use.

Oudomxay Province is ethnically diverse, with Khmu, Lao-Tai, Hmong and other ethnic groups. The existing ESMF identifies Khmu and Hmong households in communities near Nam Hin Reservoir, including Thasaleung Village. However, detailed demographic and ethnic-group information for all potentially affected communities will require verification during the SS-ESIA.

Agriculture remains an important livelihood activity in rural parts of the district, including paddy rice cultivation, upland farming and livestock raising. Communities also engage in fishing, forest-product collection, trade, construction and other employment activities. The Nam Hin Reservoir supports fishing and agricultural activities, and some households depend on reservoir resources for food and income.

Land use in the Nam Hin area includes agricultural land, settlements, forest and secondary vegetation, reservoir infrastructure and other community-use areas. Land tenure and resource-use arrangements may include formal and customary rights. The current extent of land ownership, occupation and resource use within the proposed rehabilitation areas has not been fully established.

Community Infrastructure and Access to Services

Communities in the WISER project areas have varying levels of access to roads, electricity, education, healthcare, water supply and sanitation services. Access is generally influenced by location, household income and the availability of public infrastructure.

The project areas also contain existing irrigation infrastructure, local roads and other facilities used by communities. Detailed information on community infrastructure, public services and facilities potentially affected by the rehabilitation works will be collected during the SS-ESIAs.

Vulnerable Groups and Social Inclusion

Certain households and individuals may experience greater socioeconomic vulnerability due to poverty, limited land ownership, disability, age, gender, ethnicity or dependence on natural resources. Women, ethnic-group households, persons with disabilities, elderly persons and households with limited livelihood alternatives may face particular challenges in accessing information, participating in consultations and benefiting from project activities.

The extent and characteristics of vulnerable groups within the subproject areas have not yet been fully established. These will be identified through site-specific socioeconomic surveys and consultations during the preparation of the SS-ESIAs, with attention to the requirements of the applicable World Bank Environmental and Social Standards.

Additionally, detailed and updated information is required on the number and characteristics of potentially affected households, land tenure, ethnic-group composition, livelihoods, irrigation and downstream water use, fisheries dependence, vulnerable groups and community infrastructure. These information gaps will be addressed during the preparation of the SS-ESIAs through socioeconomic surveys, consultations and other appropriate methods. The findings will inform the assessment of potential social impacts and the preparation of relevant site-specific environmental and social management instruments.

4. ENVIRONMENTAL & SOCIAL RISKS AND IMPACTS, AND MITIGATIONS MEASURES

50. The proposed project interventions are expected to improve dam safety, strengthen the resilience of irrigation infrastructure to climate-related risks, increase the reliability and efficiency of irrigation water delivery, improve water security and agricultural productivity, enhance integrated water resources management, and strengthen institutional capacity for dam safety management and reservoir operation. The Project will also contribute to improving the safety of downstream communities, protecting water resources and ecosystem services, and promoting sustainable and climate-resilient rural development.

51. The Project may, however, give rise to environmental and social risks and impacts associated with the rehabilitation and operation of irrigation dams, reservoirs, spillways, irrigation canals, and

associated infrastructure. Potential environmental risks include construction-related impacts on water quality, erosion and sedimentation, aquatic habitats, biodiversity, waste generation, dust, noise, and pollution, together with dam safety risks related to structural stability, reservoir operation, seepage, spillway capacity, sediment management, emergency preparedness, and downstream community safety. Potential social risks include temporary or permanent land acquisition, restrictions on land use, livelihood impacts, occupational and community health and safety risks, labor influx, SEA/SH risks, impacts on ethnic groups, and impacts on cultural heritage where present. These risks will be assessed through site-specific ESIAs, and appropriate mitigation measures will be incorporated into the ESMPs, Dam Safety Plans, Emergency Preparedness Plans, Resettlement Plans (RPs), Ethnic Group Engagement Plans (EGEPs), and other relevant environmental and social instruments prepared under the Project.

52. The following sections present the anticipated positive environmental and social benefits of the WISER Project, followed by the potential environmental and social risks and impacts associated with Project activities, together with the corresponding mitigation and management measures to be implemented in accordance with the World Bank Environmental and Social Framework (ESF), the applicable laws and regulations of the Lao PDR, and Good International Industry Practice (GIIP).

4.1 Positive Impacts

53. The WISER Project aims to improve water security and enhance the resilience of selected water infrastructure to water-related climate risks in Lao PDR. Through the rehabilitation of high-risk irrigation dams, modernization of irrigation systems, strengthening of dam safety governance, and improvement of integrated water resources management, the Project is expected to generate significant environmental, social, institutional, and economic benefits**.** The primary beneficiaries will be farmers and rural households served by the rehabilitated irrigation dams and associated irrigation conveyance systems, who will benefit from more reliable, efficient, and climate-resilient water service delivery for agricultural production and, where applicable, domestic water supply. **Secondary beneficiaries** include downstream communities benefiting from reduced dam safety risks, Water User Groups (WUGs), local authorities, and national and subnational institutions that will benefit from strengthened dam safety management, water resources planning, and institutional coordination.

54. Key Project Positive Impacts include:

- **Improved dam safety and reduced downstream risks:** Rehabilitation of high-risk irrigation dams, including improvements to embankments, spillways, outlet structures, seepage control, sediment management, instrumentation, and dam safety monitoring systems, will significantly reduce the risk of dam failure and improve the safety of downstream communities, infrastructure, agricultural land, and other water users.
- **Improved water security and irrigation service delivery:** Rehabilitation of irrigation dams, reservoirs, canals, and water conveyance systems will improve the reliability, efficiency, and climate resilience of irrigation water delivery, reducing service interruptions and increasing agricultural productivity, food security, farmer incomes, and livelihood resilience. Where applicable, the Project will also improve the reliability of domestic water supply.
- **Enhanced climate resilience of water infrastructure:** The Project will strengthen the resilience of irrigation infrastructure to floods, droughts, sedimentation, erosion, and other

climate-related hazards through improved engineering design, reservoir operation, water allocation planning, and implementation of dam safety measures.

- **Strengthened integrated water resources management:** Preparation of River Basin Profiles and River Basin Management Plans, establishment of the Irrigation Water Management Center, improved hydrological monitoring, water accounting, water allocation planning, and analytical tools will support more efficient, equitable, and sustainable management of water resources.
- **Strengthened dam safety governance and institutional capacity:** The Project will support implementation of the Dam Safety Law (2022) by strengthening the regulatory, institutional, and technical framework for irrigation dam safety, including establishment of a Dam Safety Division within the DOI, development of technical regulations and operational procedures, improved emergency preparedness, and enhanced coordination among relevant government agencies.
- **Improved operation and maintenance of irrigation infrastructure:** Preparation of Operation and Maintenance Plans (O&MPs), Emergency Preparedness Plans (EPPs), Water Allocation Plans, Standard Operating Procedures (SOPs), and installation of instrumentation and monitoring systems will improve the long-term safety, operation, maintenance, and sustainability of rehabilitated irrigation dams and associated irrigation infrastructure.
- **Environmental protection and improved ecosystem management:** The Project will improve sediment management, erosion control, reservoir and catchment management, and environmental flow management while incorporating nature-based solutions, where appropriate, to protect water resources, aquatic ecosystems, biodiversity, and ecosystem services.
- **Employment generation and local economic development:** Rehabilitation works will generate temporary employment opportunities for local communities and increase demand for local goods and services. Improved irrigation reliability will also support higher agricultural production, increased farm incomes, strengthened rural livelihoods, and local economic growth.
- **Inclusive development and strengthened community resilience:** Farmers, Water User Groups (WUGs), women, ethnic groups, vulnerable households, and downstream communities will benefit from improved irrigation services, safer infrastructure, enhanced stakeholder participation, strengthened institutional capacity, and more resilient livelihoods through equitable access to Project benefits.
- **Improved knowledge, monitoring, and decision-making:** The Project will strengthen hydrological monitoring, dam instrumentation, water accounting, climate-informed planning, asset management, and reservoir operation systems, enabling more informed decision-making for dam safety, water allocation, emergency preparedness, and long-term water infrastructure management.
- **Contribution to national development and climate resilience:** The Project supports implementation of the **Dam Safety Law (2022)**, strengthens integrated water resources management, improves the resilience and sustainability of irrigation infrastructure, and

contributes to Lao PDR's objectives for climate adaptation, agricultural development, food security, and sustainable water resources management.

4.2 Negative Impacts, E&S Risks and Mitigation Measures

55. The WISER Project involves rehabilitation of existing irrigation dams, reservoirs, irrigation conveyance systems, and associated infrastructure, together with institutional strengthening for dam safety and integrated water resources management. While the Project is expected to generate substantial environmental and social benefits, rehabilitation works and associated activities may also result in temporary and, in some cases, permanent environmental and social risks and impacts if not properly managed. Most environmental and social risks are associated with civil works under Component 1, while Components 2–4 mainly involve institutional strengthening, technical assistance, capacity building, and project management, which present relatively limited environmental and social risks.

56. The primary environmental risks include: (i) dam safety risks associated with the rehabilitation and operation of existing irrigation dams, including structural stability, spillway adequacy, seepage control, sedimentation, emergency preparedness, and potential impacts on downstream communities; (ii) water balance and allocation risks arising from reservoir drawdown, changes in reservoir operations, and rehabilitation of irrigation infrastructure, which may affect downstream water availability, seasonal flows, aquatic habitats, and water users; and (iii) construction-related impacts, including soil erosion, sedimentation, water pollution, waste generation, dust, noise, traffic and access disruptions, and occupational and community health and safety risks. These risks may be exacerbated by climate variability, including more intense flooding, prolonged dry periods, and uncertain hydrological conditions. The primary social risks include potential permanent and temporary land acquisition, restrictions on land use and access, economic displacement, and livelihood losses associated with dam rehabilitation and related infrastructure improvements. Additional risks include community health and safety, labor influx, sexual exploitation and abuse and sexual harassment (SEA/SH), communicable diseases, and potential impacts on ethnic groups. Land-related impacts associated with the construction of the IWMC building will also be assessed, where applicable. The nature, magnitude, and significance of site-specific E&S risks and impacts, including impacts on affected households and vulnerable groups, will be further assessed during feasibility studies, detailed engineering design, and preparation of site-specific E&S instruments. A detailed summary of the identified risks and impacts and the corresponding mitigation measures, organized by ESS, is presented in **Table 4-1**. The table also summarizes the timing of the risks (during or after implementation) and the principal environmental and social management measures to be applied throughout the Project lifecycle.

Table 4-1: Summary of E&S Risks, Negative Impacts and Proposed Mitigation Measures by WB's ESS

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	• Dam safety risks associated with the rehabilitation and operation of **Nam Houm, Nam Suang, and Nam Hin irrigation dams**, including structural stability, embankment condition, spillway adequacy, seepage	• Apply the **Environmental and Social Management Framework (ESMF)** to all activities under Components 1–4, including civil works, technical assistance, institutional strengthening, studies, capacity building, and	**Impacts:** During implementation (construction, drawdown, associated facilities); after implementation (changed reservoir operation and water

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	control, outlet structures, sedimentation, reservoir operation, instrumentation, emergency preparedness, and downstream community safety. • Water efficiency, water balance, water allocation, and minimum environmental flow risks arising from rehabilitation of irrigation conveyance systems, changes in reservoir operation, and competing demands for irrigation, domestic water supply, downstream users, and ecosystem needs. • Temporary reservoir drawdown, sediment management, and works in or near watercourses may affect downstream water users, aquatic habitats, fisheries, seasonal flow patterns, water quality, and access to water resources. • Construction-related impacts from rehabilitation of dams, spillways, gates, weirs, canals, control structures, access roads, and ancillary facilities, including dust, noise, vibration, wastewater, spoil, waste, sediment-laden runoff, traffic disruption, and access restrictions. • Environmental and social impacts associated with worker camps, stockpile areas, fuel storage, borrow pits, quarries, disposal sites, access roads, and transportation routes. • Potential land acquisition, livelihood impacts, labor and occupational safety risks, community health and safety risks, impacts on ethnic groups, biodiversity, and cultural heritage. • Climate variability and climate change risks, including more intense rainfall, floods, droughts,	CERC activities. • Conduct environmental and social screening, risk classification, and exclusion-list screening for Nam Houm, Nam Suang, Nam Hin, and any additional subprojects. • Prepare, disclose, consult upon, adopt, and implement, as applicable, **site-specific ESIAs, ESMPs, C-ESMPs, RPs/S-RPs, EGEPs, BMPs, RDMPs, O&MPs, EPPs, TMPs, CHSP, WMPs, OHSP, Cultural Heritage Management Measures** and other required instruments. • Prepare and obtain approval for national **Environmental Impact Assessments/Initial Environmental Examinations and Environmental Compliance Certificates (ECCs)** where required. • Integrate applicable ESCP requirements and environmental and social measures into feasibility studies, Detailed Engineering Designs, procurement documents, contracts, construction supervision, operation and maintenance procedures, and monitoring systems. • Screen all technical assistance terms of reference and outputs to ensure consistency with the applicable ESSs and address potential indirect, cumulative, downstream, strategic, and transboundary implications where relevant. • Ensure that activities included in the exclusion list are ineligible for Project financing. • Prepare and implement the **CERC Manual, CERC-ESMF Addendum,** and any required site-specific instruments before CERC activities commence. • Establish and maintain the PMU, CMU, PIUs, Environmental and Social Focal Points, Environmental and Social Monitoring Committees,	allocation, residual dam safety and climate uncertainty, effects of Component 2 reforms, capacity gaps). **Measures:** Screening, ESIA and ESMP preparation, disclosure and approvals before detailed design is finalized, procurement and civil works; C-ESMP implementation, supervision and reporting throughout construction; ESMP monitoring, capacity building and plan updates continue into operation. SS-ESIA and SS-ESMP prepared, consulted upon and disclosed during feasibility study and detailed design; finalized, cleared by the World Bank and disclosed before the civil works procurement documents of each contract are issued.

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	landslides, erosion, sedimentation, and uncertainty in future hydrological conditions. • Potential indirect, downstream, cumulative, and strategic environmental and social risks associated with technical assistance, development of dam safety regulations, River Basin Profiles, River Basin Management Plans, water allocation planning, and institutional reforms under Component 2. • Limited institutional capacity within DOI, PIUs, dam operators, provincial and district authorities, ISWS, contractors, and other agencies to implement ESF and dam safety requirements. • Environmental and social risks associated with activities implemented under the CERC. • Additional subprojects that may be included under the MPA requiring further environmental and social screening and assessment.	PRCs/DRCs, GRCs, qualified environmental and social consultants, ISWS, independent monitoring support, and qualified dam safety specialists or a Panel of Experts, as applicable. • Implement regular monitoring, reporting, audits, inspections, corrective actions, incident notification and investigation, adaptive management, stakeholder engagement, and grievance management in accordance with the ESCP.	
ESS2: Labor and Working Conditions	• Occupational health and safety risks associated with dam, spillway, gate, weir, and canal rehabilitation, including excavation, earthworks, working at height, confined spaces, electrical and mechanical works, lifting operations, welding, heavy machinery, reservoir drawdown, and work near or over water. • Risks of drowning, falls, electrocution, equipment collision, slope failure, trench collapse, heat stress, excessive noise, dust exposure, vibration, and exposure to fuels, chemicals, and hazardous materials. • Inadequate worker accommodation, drinking	• Prepare, adopt, implement, and update the **Labor Management Procedures (LMP)** throughout Project implementation. • Require contractors and subcontractors to prepare and implement site-specific labor management and OHS procedures as part of their C-ESMPs. • Prepare and implement Occupational Health and Safety Management Plans, including job hazard analyses, safe work method statements, permit-to-work systems, water rescue, confined-space entry, electrical safety, lifting safety, working-at-height controls, and emergency response procedures. • Provide adequate PPE,	**Impacts:** Mainly during implementation (construction and mobilization); smaller ongoing occupational risks for operation and maintenance staff after implementation. **Measures:** LMP, labor and OHS requirements in bidding documents and contracts before procurement is completed; Codes of Conduct, worker induction and grievance mechanism in place before mobilization; OHS Plan, monitoring and

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	water, sanitation, hygiene, first aid, medical support, emergency response, transport, and working-hour arrangements. • Labor influx and pressure on local services and communities. • Risks of child labor, forced labor, discrimination, harassment, unfair recruitment, wage disputes, and inadequate employment contracts. • SEA/SH and Violence Against Children risks involving workers and communities. • Communicable disease risks, including HIV/AIDS and other infections. • Risks affecting direct workers, contracted workers, subcontracted workers, and primary supply workers. • Limited access to effective worker grievance mechanisms.	induction training, toolbox talks, qualified supervision, first aid, medical facilities, safe transport, potable water, sanitation, hygiene facilities, and suitable worker accommodation. • Establish and operate an accessible **Worker Grievance Mechanism** before workers are engaged and maintain it throughout Project implementation. • Require all workers to sign and comply with Codes of Conduct covering SEA/SH, VAC, discrimination, harassment, worker behavior, and community interaction. • Prohibit child labor and forced labor and apply age-verification and recruitment procedures. • Screen primary suppliers for significant risks of child labor, forced labor, and serious safety issues. • Provide communicable disease prevention, HIV/AIDS awareness, health screening, and referral measures where appropriate. • Monitor labor, OHS, contractor, subcontractor, and primary supplier compliance and report incidents and accidents in accordance with the ESCP.	worker GRM throughout construction; OHS procedures in the O&MP during operation.
ESS3: Resource Efficiency and Pollution Prevention and Management	• Generation of construction waste, demolition waste, spoil, excavated material, sediment, wastewater, sewage, and hazardous and non-hazardous waste. • Sediment-laden runoff and increased turbidity from earthworks, reservoir drawdown, canal rehabilitation, spillway works, sediment removal, and disposal activities. • Dust, noise, vibration, exhaust emissions, and equipment emissions from construction activities and	• Incorporate resource-efficiency and pollution-prevention measures into site-specific ESMPs and C-ESMPs. • Prepare and implement Waste Management Plans (WMPs), Pollution Prevention Plans, Erosion and Sediment Control Plans, Hazardous Materials Management Plans, Borrow Area and Quarry Management Plans, Spoil Disposal Plans, Worker Camp Management Plans, RDMPs, WAPs, and other relevant management plans, as	**Impacts:** Mostly during implementation (waste, runoff, turbidity, dust, noise, spills, temporary effects on water levels); long-term effects after implementation (unresolved erosion and sedimentation, contamination of poorly restored sites, long-term water balance changes,

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	material transport. • Risks from storage, handling, transport, and disposal of fuels, lubricants, chemicals, solvents, batteries, and other hazardous materials. • Soil erosion, slope instability, sedimentation, and deterioration of water quality in reservoirs, rivers, canals, and downstream areas. • Pollution and sanitation risks associated with worker camps, site offices, workshops, fuel storage areas, and temporary facilities. • Inefficient use of water, energy, aggregates, sand, rock, soil, timber, and other construction materials. • Environmental impacts from unlicensed or poorly managed quarries, borrow pits, sand sources, and disposal sites. • Temporary impacts on reservoir levels, downstream water availability, irrigation supply, domestic water use, and minimum environmental flows. • Potential increased use of fertilizers, pesticides, and other agrochemicals due to improved irrigation and higher cropping intensity. • Inadequate restoration of disturbed areas following construction.	appropriate. • Implement erosion, sediment, stormwater, slope-stabilization, and turbidity-control measures. • Establish bunded fuel and chemical storage, hazardous-material registers, spill-prevention procedures, emergency spill kits, and spill-response arrangements. • Provide designated concrete washout areas and prevent untreated wastewater or contaminated runoff from entering water bodies. • Use only licensed and environmentally acceptable quarries, borrow pits, disposal sites, sand sources, and material suppliers; prohibit sourcing from protected or environmentally sensitive areas. • Conduct water-balance calculations and determine minimum environmental flow requirements for construction and operation, taking into account irrigation, domestic water supply, downstream users, and ecosystem needs. • Coordinate reservoir drawdown and water releases through the **RDMP** and **WAP** to maintain downstream water supply and environmental flows. • Promote efficient use of water, energy, and construction materials and reuse suitable spoil and excavated materials where technically and environmentally safe. • Restore borrow areas, disposal sites, camps, stockpile areas, access roads, and other disturbed areas after construction. • During subproject preparation, assess whether improved irrigation reliability is likely to increase cropping intensity or change crop choices in ways that could increase agrochemical use or	higher agrochemical use). **Measures:** Pollution prevention, waste, erosion and sediment control, and borrow and disposal site requirements agreed in ESMPs and contracts before works start; applied and monitored daily through construction; site restoration at completion; water allocation and agrochemical management during operation.

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
		runoff. Where material risks are identified, include proportionate mitigation and operational monitoring measures drawing on Lao GAP guidelines in the site-specific ESMP. • Include awareness, training, and good-practice measures on fertilizers, pesticides, and agrochemical use where improved irrigation may increase agricultural inputs. • Monitor water quality, turbidity, sedimentation, waste, emissions, noise, and pollution-control performance.	
ESS4: Community Health and Safety	• Dam safety risks to downstream communities during rehabilitation and operation, including structural failure, uncontrolled releases, overtopping, seepage, gate malfunction, inadequate spillway capacity, and emergency events. • Climate-related dam safety risks associated with extreme rainfall, floods, catchment rainfall projections, reservoir operation, landslides, sedimentation, spillway capacity, and downstream flooding. • Community risks from temporary reservoir drawdown, altered water releases, and restricted access to reservoirs, canals, fishing areas, water points, and agricultural land. • Traffic and road safety risks from increased movement of trucks, machinery, materials, and workers. • Public exposure to excavation, open canals, deep water, machinery, unstable slopes, work sites, hazardous materials, and temporary structures. • Risks of children entering work sites, reservoirs, spillways, canals, and other	• Apply dam safety requirements in accordance with ESS4 Annex 1, incl. the CSQAP, O&MP, IP and EPP, as appropriate. • Engage qualified dam safety specialists and establish a Panel of Experts (PoE) where required. • Undertake dam safety assessments, Dam Break Analysis (DBA) to inform EPP preparation, instrumentation and monitoring, structural assessments, spillway assessments, seepage assessments, reservoir operation assessments, and downstream hazard assessments. • Prepare and implement Traffic Management Plans (TMPs), Community Health and Safety Plans (CHSPs), Emergency Response Procedures, Instrumentation Plans, and other relevant management plans through the ESMP and C-ESMP. • Implement traffic management measures including signage, barriers, flaggers, speed controls, safe crossings, and public awareness campaigns. • Establish worksite access controls, fencing, warning signs, child-safety measures, rescue	**Impacts:** During implementation (works-related dam safety, traffic, road and bridge closures, public access, labor influx, UXO, construction pollution); after implementation (residual dam safety and climate-related flood risks, which decrease after rehabilitation but do not disappear). **Measures:** Dam safety assessments, DBA, PoE review and UXO screening before design is finalized and works start; TMP, CHSP, EPP, RDMP and community notification before and throughout construction; O&MP, instrumentation, surveillance and emergency preparedness maintained during operation.

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	hazardous locations. • Dust, noise, vibration, water contamination, and access disruption affecting nearby villages, schools, health facilities, farms, markets, and businesses. • Risks arising from the behavior of Project workers, labor influx, communicable diseases, SEA/SH, VAC, and community conflict. • Weak information disclosure, warning systems, emergency communication, evacuation arrangements, and coordination among dam operators, authorities, and downstream communities.	equipment, and safe public access around reservoirs and canals. • Coordinate reservoir drawdown, construction schedules, water releases, temporary access restrictions, and irrigation interruptions through the RDMP, WAP, and EPP in consultation with Water User Groups (WUGs), downstream users, local authorities, and affected communities. • Implement emergency notification systems, early warning procedures, evacuation plans, drills, and communication protocols for downstream communities in accordance with the EPP. • Implement labor influx management, communicable disease prevention, Codes of Conduct, SEA/SH prevention measures, and project GRMs in accordance with the LMP, ESMP, and C-ESMP. • Monitor community health and safety performance, emergency preparedness, dam safety, traffic safety, public complaints, and implementation of corrective actions throughout Project implementation.	
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	• Permanent or temporary land acquisition where rehabilitation works extend beyond existing dam, reservoir, canal, weir, or public right-of-way boundaries. • Additional land requirements for spillway expansion, canal extension, access roads, monitoring facilities, worker camps, borrow areas, disposal sites, and ancillary facilities. • Temporary occupation of agricultural land and disruption of farming activities during construction.	• Apply the **Resettlement Policy Framework (RPF)** to all Project activities. • Conduct land acquisition, resettlement, access-restriction, and livelihood screening during feasibility studies and detailed design. • Avoid and minimize land acquisition, impacts on structures, physical displacement, and economic displacement through alternative design and construction methods. • Prepare, disclose, consult upon, adopt, and implement site-specific **Resettlement Plans (RPs) or Simplified**	**Impacts:** During implementation (temporary land use, access restrictions, temporary relocation, construction-period livelihood effects); after implementation (permanent land acquisition, displacement and livelihood loss, which are long-term and potentially irreversible without effective restoration). **Measures:** Screening and avoidance during feasibility and

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	• Restrictions on access to reservoirs, canals, fishing areas, water points, agricultural land, roads, and community facilities. • Potential physical displacement where structures or households are affected. • Economic displacement and livelihood losses affecting farmers, fishers, aquaculture operators, vendors, tenants, informal users, and downstream water users. • Impacts associated with reservoir drawdown, altered water allocation, reduced water availability, or temporary interruption of irrigation services. • Disproportionate impacts on poor households, female-headed households, elderly persons, persons with disabilities, landless households, and other vulnerable groups. • Disputes relating to eligibility, asset valuation, compensation rates, customary use, temporary land arrangements, and delayed compensation.	**Resettlement Plans (S-RPs)**, as applicable. • Recognize eligible legal, customary, and informal users consistent with ESS5. • Provide compensation at full replacement cost and required assistance before taking possession of affected land or assets, clearing affected land, or commencing relevant works. Deliver livelihood restoration measures on the schedule specified in the approved RP and monitor recovery. • Provide compensation at full replacement cost and livelihood-restoration measures before taking possession of affected land or assets and before commencement of relevant works. • Provide transitional assistance, moving allowances, restoration of access, and specific support to vulnerable affected persons, where applicable. • Document temporary land-use agreements, reinstate temporarily occupied land, and obtain informed agreements where temporary land use is negotiated. • Establish and maintain accessible land- and compensation-related grievance channels through the Project GRM. • Monitor and report compensation, livelihood restoration, access restoration, and resettlement outcomes.	detailed design; RPs and livelihood restoration prepared, approved and implemented, with compensation paid, before land is taken, affected land is cleared or works start in the affected area; GRM and monitoring through construction; RP completion audit and follow-up after implementation.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	• Localized and temporary impacts on aquatic habitats, fish species, fisheries, riparian vegetation, and biodiversity in reservoir, riverine, and canal environments. • Changes in water quality, turbidity, sedimentation, water levels, seasonal flows, and environmental flows affecting aquatic ecosystems.	• Undertake biodiversity screening for all subprojects, including screening for natural and critical habitats, during environmental and social screening and assessment. • Conduct site-specific biodiversity, aquatic ecology, fisheries, habitat, and ecosystem-service assessments where required.	**Impacts:** Mostly temporary and during implementation (drawdown, in-water works, clearance, turbidity), with recovery expected after restoration; longer-term effects possible (reservoir operation and environmental flows,

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	• Habitat disturbance caused by temporary reservoir drawdown, spillway works, canal rehabilitation, sediment removal, vegetation clearance, access roads, borrow areas, and disposal sites. • Potential impacts on natural habitats, ecosystem services, and downstream fisheries requiring further site-specific assessment. • Catchment degradation, erosion, shifting cultivation, and sediment inflow affecting reservoir ecosystems and dam performance, particularly in the Nam Hin catchment. • Worker hunting, fishing, collection of aquatic resources, vegetation removal, or disturbance of wildlife. • Risks of invasive species during revegetation and restoration. • Insufficient biodiversity baseline data before finalization of detailed designs.	• Apply the mitigation hierarchy to avoid, minimize, restore, and monitor biodiversity impacts in accordance with ESS6. • Prepare and implement Biodiversity Management Plans (BMPs) where significant biodiversity risks are identified and incorporate biodiversity mitigation measures into the ESMP and C-ESMP, as appropriate. • Coordinate implementation of the Water Allocation Plan (WAP), Reservoir Drawdown Management Plan (RDMP), and Operation and Maintenance Plan (O&MP) to maintain environmental flows, downstream water availability, aquatic habitats, and fisheries. • Schedule reservoir drawdown, sediment removal, in-water works, and construction activities to minimize impacts on aquatic biodiversity and sensitive ecological periods. • Protect riparian vegetation, wetlands, and natural habitats, and restrict vegetation clearing to approved work areas only. • Restore disturbed habitats using native species and implement erosion control, slope stabilization, catchment management, and nature-based solutions, where appropriate. • Prohibit unauthorized hunting, fishing, wildlife collection, vegetation removal, and introduction of invasive species through the Contractor's Code of Conduct and the C-ESMP. • Monitor biodiversity, aquatic habitats, fisheries, environmental flows, water quality, vegetation restoration, and implementation of BMP mitigation measures throughout Project implementation.	residual sedimentation, catchment degradation, inadequate restoration). **Measures:** Biodiversity screening and baseline assessment during feasibility and design; BMP and mitigation measures agreed before works; seasonal timing, fish and wildlife protection and restoration during construction; monitoring and adaptive management during operation.

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities / Ethnic Groups	• Khmu and Hmong communities meeting ESS7 criteria are present within the broader Project areas, particularly in Oudomxay Province and potentially in future MPA locations. • Potential impacts on customary land and natural-resource use, agricultural livelihoods, water access, fishing, cultural practices, spiritual sites, and community institutions. • Language, literacy, cultural, gender, and geographic barriers limiting meaningful consultation and access to Project information. • Risk that ethnic groups may not receive equitable access to irrigation services, employment, training, compensation, livelihood support, and other Project benefits. • Potential impacts arising from catchment management, water allocation, dam safety measures, emergency planning, land acquisition, and temporary access restrictions. • Limited access to grievance mechanisms and risk of culturally inappropriate grievance resolution. • Potential disproportionate impacts on ethnic women, poor households, elderly persons, and persons with disabilities.	• Apply the **Ethnic Group Engagement Framework (EGEF)** and screen each subproject and relevant technical assistance activity for ESS7 applicability. • Prepare, disclose, consult upon, adopt, and implement site-specific **Ethnic Group Engagement Plans (EGEP)** before activities affecting ethnic groups commence. • Conduct culturally appropriate and meaningful consultations using local languages, trained facilitators, and oral, visual, and accessible communication methods. • Ensure participation of ethnic women, elderly persons, poor households, persons with disabilities, and other vulnerable community members. • Integrate culturally appropriate benefit-sharing, livelihood support, water access, employment, and capacity-building measures into subproject design. • Apply Free, Prior and Informed Consent where required under ESS7. • Establish culturally appropriate and accessible grievance arrangements. • Coordinate with the Lao Front for National Development, local authorities, mass organizations, and village representatives. • Monitor participation, benefits, grievances, and implementation of EGEP commitments.	**Impacts:** During implementation (construction, access restrictions, consultation gaps); in the long term (land, resource use and livelihood effects, unequal access to benefits). **Measures:** ESS7 screening during feasibility and design; culturally appropriate consultation and EGEP preparation and approval before any activities affecting ethnic groups start; EGEP implementation, benefit-sharing and the GRM throughout construction; monitoring and continued engagement during operation.
ESS8: Cultural Heritage	• Preliminary screening has identified graveyards within Project areas that may have cultural, religious, spiritual, and ancestral significance, including for ethnic communities. • Potential impacts on temples, cemeteries, sacred places, archaeological resources, cultural landscapes, ritual sites, and	• Conduct cultural heritage screening during feasibility studies, environmental and social screening, and detailed design for each dam and associated irrigation scheme. • Avoid impacts on graveyards and other cultural heritage resources wherever feasible through design adjustment and construction planning. • Where avoidance is not	**Impacts:** During implementation (excavation, vibration, access restrictions, chance finds); permanent and irreversible once heritage is damaged or lost; loss of access or community opposition may

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	other tangible and intangible heritage. • Direct physical disturbance from excavation, canal works, access roads, spillway expansion, land acquisition, vibration, or construction traffic. • Restricted community access to graveyards, sacred sites, or places used for ceremonies. • Chance finds during excavation, earthworks, dredging, and construction. • Cultural conflict or community opposition where consultation is inadequate or proposed mitigation is not culturally appropriate.	feasible, undertake culturally appropriate consultation with affected communities, ethnic groups, religious or spiritual leaders, and relevant authorities. • Prepare and implement **Cultural Heritage Management Measures** as part of site-specific ESMPs and C-ESMPs or prepare a standalone Cultural Heritage Management Plan where required. • Include and implement **Chance Find Procedures** in the ESMF, bidding documents, contracts, SS-ESMPs, and C-ESMPs. • Train contractors and workers on cultural heritage protection and immediately suspend works where chance finds are encountered. • Maintain community access and respect cultural calendars, ceremonies, and site-specific protocols. • Obtain relevant authority and community clearance before resuming works in affected heritage areas.	continue after the works. **Measures:** Cultural heritage screening and consultation during feasibility and design, with avoidance by design; heritage measures and the Chance Find Procedure in ESMPs and contracts before works; chance find procedure applied throughout excavation and earthworks; protection and access arrangements maintained after works.
ESS10: Stakeholder Engagement and Information Disclosure	• The Project involves a wide range of stakeholders, including DOI, provincial and district authorities, dam operators, WUGs, farmers, downstream users, domestic water users, fishers, ethnic groups, women, vulnerable households, emergency agencies, and local communities. • Potential exclusion of women, ethnic groups, poor households, persons with disabilities, elderly persons, non-Lao speakers, remote communities, and downstream populations. • Limited access to timely, understandable, and culturally appropriate information on dam rehabilitation, reservoir drawdown, water allocation,	• Prepare, disclose, implement, and regularly update the **Stakeholder Engagement Plan (SEP)** as a living document. • Conduct stakeholder mapping and engagement for all four components, the three identified dams, future MPA subprojects, technical assistance activities, and CERC activities. • Provide timely and accessible information on project design, construction schedules, reservoir drawdown, water releases, water allocation, access restrictions, land acquisition, compensation, dam safety, emergency warnings, and grievance channels. • Use culturally appropriate methods, Lao and relevant ethnic languages, and oral, visual, and accessible materials.	Impacts: Most significant during preparation and implementation; risks linked to water allocation, grievance handling and understanding of dam safety and emergency warning continue after implementation. Measures: SEP updated and consultations held during preparation and before each key decision point; disclosure of instruments before works; information on schedules, drawdown and closures and the project GRM

WB's ESS	Key Risks and Impacts	Proposed Mitigation Measures / Instruments	Timing of Impacts and Measures
	construction schedules, land impacts, emergency arrangements, and Project benefits. • Conflicts over water allocation, temporary service disruption, access restrictions, land acquisition, compensation, employment, contractor behavior, and Project benefits. • Weak, inaccessible, under-resourced, or delayed grievance mechanisms. • Sensitive grievances involving SEA/SH requiring confidential and survivor-centered handling. • Inadequate stakeholder engagement during preparation of dam safety regulations, River Basin Profiles, River Basin Management Plans, Water Allocation Plans, and other Component 2 activities.	• Conduct targeted consultations with women, ethnic groups, downstream communities, WUGs, farmers, fishers, vulnerable households, and persons with disabilities. • Establish, publicize, maintain, and operate the Project GRM at village, district, provincial, and national levels, at no cost and without retaliation. • Maintain a separate Worker GRM in accordance with the LMP. • Ensure SEA/SH complaints are handled through confidential, safe, and survivor-centered channels with referral to appropriate service providers. • Document stakeholder feedback and disclose how comments and concerns have been addressed. • Monitor and report stakeholder engagement activities, grievances, response times, outstanding cases, and resolution status through regular ESHS reporting.	operating throughout construction; continued engagement, GRM and WUG involvement during operation.

4.3 Climate Risk Screening, Climate-Resilient Design, and Climate Change Adaptation

57. The WISER Project is designed to strengthen water security and enhance the resilience of selected irrigation dams and associated water infrastructure to water-related climate risks. Climate change may increase the frequency and intensity of extreme rainfall, floods, droughts, landslides, erosion, sedimentation, and hydrological variability, potentially affecting dam safety, reservoir operation, irrigation service delivery, downstream communities, and aquatic ecosystems. In accordance with World Bank ESS1 and ESS4, climate risks will therefore be systematically considered throughout subproject screening, feasibility assessment, detailed design, construction, operation, maintenance, and emergency preparedness.

58. Climate risk screening and assessment will be undertaken for Nam Houm, Nam Suang, Nam Hin, and any additional subprojects included under the Project. The findings will be incorporated into dam safety assessments, hydrological studies, water-balance calculations, environmental-flow assessments, engineering designs, construction supervision, Operation and Maintenance Plans, Water Allocation Plans, Emergency Preparedness Plans, and site-specific ESMPs. Climate-related risks will also be considered in the preparation of River Basin Profiles, River Basin Management Plans, and other technical assistance activities under Component 2.

A. Climate Risk Screening and Climate-Resilient Design

59. A procedural and risk-based approach will be applied to integrate climate resilience into Project planning and implementation.

- **Climate risk screening:** Climate-related hazards relevant to each subproject will be identified during environmental and social screening, including extreme rainfall, floods, droughts, prolonged dry spells, landslides, catchment erosion, sedimentation, heat stress, and changes in seasonal water availability.
- **Hydrological and climate assessment:** Site-specific studies will consider historical hydrological data, rainfall projections, catchment conditions, reservoir inflows, drought conditions, extreme flood events, sediment loads, and uncertainty in future hydrological conditions.
- **Dam safety assessment:** Climate-related dam safety risks will be assessed in accordance with ESS4 Annex 1, including structural stability, spillway adequacy under projected extreme rainfall, seepage control, sedimentation, reservoir operating levels, drawdown capacity, gate performance, and potential downstream flooding.
- **Downstream flood risk from changes to spillways and reservoir operation:** Where spillway capacity, outlet works or reservoir operating rules are proposed to change, downstream flood risk under existing and proposed conditions for comparable flood inflow scenarios with the dam intact shall be assessed. The assessment shall compare peak discharge, timing of flood flows, and downstream inundation depth and extent, and identify changes in exposure of communities, agricultural land and infrastructure. The findings shall inform the detailed design, reservoir operating rules and mitigation measures in the site-specific ESIA and ESMP.
- **Water balance and allocation:** Water-balance calculations will consider projected changes in water availability and competing needs for irrigation, domestic water supply, environmental flows, downstream users, and reservoir operation. Water Allocation Plans will include measures for managing shortages and seasonal variability.
- **Design integration:** Climate risks will be incorporated into Detailed Engineering Designs, including appropriate design floods, spillway and outlet capacities, dam freeboard, erosion and slope protection, drainage systems, resilient construction materials, sediment-management measures, and safety-related instrumentation.
- **Nature-based solutions:** Nature-based measures may be applied where appropriate, including catchment restoration, vegetation-based erosion control, slope stabilization, riparian rehabilitation, sediment management, and protection of reservoir and downstream ecosystems.
- **Construction planning:** Construction sequencing, temporary reservoir drawdown, water releases, access arrangements, and in-water works will be planned to account for seasonal rainfall, flood and drought conditions, community water needs, and emergency risks.
- **Operational resilience:** Climate considerations will be integrated into Operation and Maintenance Plans, Standard Operating Procedures, Instrumentation Plans, Water Allocation Plans, and Emergency Preparedness Plans.
- **Monitoring and adaptive management:** Climate-relevant indicators will be included in monitoring systems to track reservoir levels, rainfall, inflows, seepage, sedimentation, water

quality, environmental flows, infrastructure performance, and downstream conditions. Operational procedures and mitigation measures will be adjusted where monitoring indicates changing risks.

60. This approach will ensure that climate-related risks are identified early and addressed through design, operation, institutional arrangements, monitoring, and emergency preparedness.

B. Contribution of Project Interventions to Climate Adaptation and Resilience

61. The Project components collectively contribute to climate adaptation and improved resilience as follows:

- **Improved resilience of high-risk irrigation dams:** Rehabilitation of Nam Houm, Nam Suang, and Nam Hin dams will improve structural stability, seepage control, spillway and outlet capacity, sediment management, instrumentation, and operational safety under increasingly variable climate and hydrological conditions.
- **More reliable irrigation and water services:** Rehabilitation of reservoirs, canals, control structures, and distribution systems will reduce water losses and improve the reliability and efficiency of water delivery during droughts and periods of water scarcity.
- **Reduced downstream climate and dam safety risks:** Improved dam safety assessments, emergency preparedness, warning arrangements, reservoir operation, and downstream communication will reduce risks to communities, agricultural land, infrastructure, and livelihoods.
- **Climate-responsive reservoir operation and water allocation:** Water accounting, hydrological monitoring, water-balance assessments, and Water Allocation Plans will support more flexible and equitable management of water among irrigation, domestic supply, environmental flows, and downstream users.
- **Improved catchment and sediment management:** Erosion control, sediment management, catchment planning, and nature-based solutions will help reduce sediment inflow, protect reservoir storage, stabilize slopes, and improve long-term infrastructure performance.
- **Strengthened monitoring and decision-making:** The Irrigation Water Management Center will improve hydrological monitoring, data management, modelling, analytics, water accounting, and operational decision-making for climate-resilient irrigation management.
- **Strengthened dam safety governance:** Operationalization of the Dam Safety Law, establishment of a Dam Safety Division within DOI, improved inter-agency coordination, and capacity building will strengthen national systems for managing climate-related dam safety risks.
- **Climate-informed basin planning:** River Basin Profiles and River Basin Management Plans will integrate flood and drought risks, water availability, competing demands, ecosystem needs, and climate variability into basin-level planning and coordination.
- **Institutional resilience:** Training, technical assistance, monitoring systems, and clearer institutional responsibilities will improve the ability of national, provincial, district, and community institutions to anticipate, manage, and respond to water-related climate risks.

- **Rapid emergency response:** Component 4, the CERC, will allow rapid reallocation of Project funds following an eligible crisis or emergency. Any activated activities will be screened and implemented in accordance with the CERC Manual, CERC-ESMF Addendum, applicable ESSs, and climate-resilient recovery principles.

62. Through these measures, the WISER Project will strengthen the resilience of irrigation dams, water-distribution systems, institutions, and downstream communities while supporting sustainable and climate-informed water resources management.

5. PROCEDURES FOR ENVIRONMENTAL & SOCIAL MANAGEMENT

63. The Environmental and Social Management Procedure for the WISER Project provides a systematic process for screening, identifying, assessing, managing, monitoring, and reporting environmental and social (E&S) risks and impacts throughout the Project cycle. The procedure applies to all Project components, including rehabilitation of Nam Houm, Nam Suang, and Nam Hin irrigation dams, rehabilitation of irrigation conveyance systems, establishment of the Irrigation Water Management Center, institutional strengthening for dam safety and integrated water resources management, Project management activities, and any activities financed under the CERC.

64. The procedure is fully aligned with the World Bank ESF, the applicable ESSs, the Project's ESCP, and the applicable laws and regulations of Lao PDR. It establishes a risk-based approach to ensure environmental and social considerations are integrated throughout project planning, feasibility studies, detailed engineering design, procurement, construction, operation, maintenance, monitoring, and emergency response.

65. Once a subproject or Project activity has been identified, environmental and social risk management begins with Environmental and Social Screening, which determines the applicable ESSs, national regulatory requirements, environmental and social risk classification, Project eligibility, and the environmental and social instruments required. Screening considers, as appropriate, dam safety, structural integrity, reservoir operation, water balance, water allocation, environmental flows, downstream community safety, land acquisition and resettlement, labor and occupational health and safety, community health and safety, biodiversity, aquatic habitats, pollution prevention, pesticide/agrochemical use management, waste and hazardous materials management, cultural heritage, ethnic groups, climate change, cumulative impacts, associated facilities, and emergency preparedness. Climate risk screening, climate-resilient design, and climate change adaptation shall be carried out in accordance with Section 4.3 and are operationalized through the screening, assessment, design, procurement, construction, operation, and monitoring procedures set out in this Chapter.

66. Based on the screening results, the Project applies the mitigation hierarchy (avoid–minimize–mitigate–restore–and, where appropriate, offset or compensate) to identify appropriate mitigation measures and environmental and social management instruments. Depending on the nature, scale, location, and significance of the identified risks and impacts, these may include ESIAs, ESMPs, C-ESMPs, RPs, EGEPs, BMPs, Dam Safety Plans, O&MPs, EPPs, Water Allocation Plans, TMPs, OHS Plans, WMPs, Cultural Heritage Management Plans, and other site-specific environmental and social instruments, as required. Meaningful stakeholder engagement, information disclosure, grievance management, monitoring, adaptive management, incident reporting, and environmental and social performance reporting will be integrated throughout the Project lifecycle in accordance with ESS10, the Stakeholder Engagement Plan (SEP), and the

Environmental and Social Commitment Plan (ESCP). Special attention will be given to farmers, Water User Groups (WUGs), downstream communities, women, ethnic groups, vulnerable households, and other affected stakeholders.

67. The ESMF is supported by practical procedures, tools, and templates provided in its Annexes, including Environmental and Social Screening Forms, exclusion criteria, ESIA and ESMP templates, Contractor ESMP guidance, Dam Safety screening checklists, climate risk screening module, guidance and template for climate risk assessment, monitoring checklists, consultation records, grievance forms, incident reporting formats, environmental and social monitoring registers, and reporting templates, to facilitate consistent preparation, implementation, monitoring, and reporting of environmental and social management measures across all WISER Project activities.

5.1 Environmental and Social Screening

5.1.1 Purpose and timing of screening

68. Environmental and social (E&S) screening is the first step in applying this ESMF. It determines whether a proposed activity is eligible for financing and which assessments, instruments and approvals are required before it can proceed. Screening is undertaken in accordance with ESS1, the Environmental Protection Law (2024), EIA Decree No. 389/GOL (2022) and the Ministerial Instruction on Projects Requiring IEE or EIA (2023). The WISER Project is rated Substantial for environmental and social risk. The screening therefore has two functions: to confirm that each activity stays within the Project's risk rating, and to set assessment and management requirements proportionate to a Substantial-risk operation.

69. Screening is required for every proposed subproject and activity financed under the Project, including civil works, technical assistance, feasibility studies and detailed engineering design (DED). It shall be carried out as early as possible after an activity is identified, and before site selection, design parameters, procurement or any physical works are finalized, so that findings can shape the design in line with the mitigation hierarchy. Screening shall be repeated, and the Annex 2 form updated, whenever the scope, design, location or implementation approach of an activity changes in a way that could alter its risk profile. For the three priority dams (Nam Houm, Nam Suang and Nam Hin), screening shall be updated once the feasibility studies and DED confirm the final scope of works. Climate risk screening applies to Nam Houm, Nam Suang, Nam Hin, and any additional subprojects financed under the MPA, and to technical assistance activities under Component 2, including River Basin Profiles and River Basin Management Plans. Activities financed under the CERC shall be screened in accordance with the CERC Manual and the CERC-ESMF Addendum and shall apply climate-resilient recovery principles.

5.1.2 Responsibilities and how screening is conducted

70. The PMU is responsible for ensuring that environmental and social (E&S) screening is completed for each Project activity. The screening process will be led by the relevant PIU, with technical support from the E&S Consultant (Firm), the Feasibility Study and Detailed Engineering Design (FS & DED) Consultant, and, where necessary, specialists in dam safety, water resources, biodiversity, resettlement, and ethnic groups. The screening team shall be identified in the screening form provided in Annex 2. The PIU will coordinate and conduct the screening, including site visits, collection of site-specific information, and consultations with local authorities and communities, as appropriate. The FS & DED Consultant will provide technical information on the proposed works, project footprint, reservoir drawdown, borrow and spoil disposal areas, and construction methods. The E&S Consultant will provide technical guidance, assist the PIU in identifying and assessing potential E&S risks and impacts, and support the preparation of the screening form, including recommendations on the appropriate E&S risk classification and required instruments. The PMU will review

and approve the completed screening form and ensure that the required E&S instruments are prepared in accordance with the ESMF and ESCP. Screening results and site-specific E&S instruments will be submitted to the World Bank for review and clearance as part of the ESMP or as requested.

71. Screening is conducted in the following steps:

- **Step 1: Compile information.** The team shall assemble the available technical description of the activity, location maps and layouts, existing studies (including dam condition assessments and technical notes), spatial data on protected areas, forests, wetlands, settlements and land use, and any available information on land tenure and affected communities.
- **Step 2: Eligibility check.** The activity shall first be checked against the Ineligible/Negative Criteria List (Annex 1). If any criterion applies, including the criterion on activities that would be classified as High risk, the activity is not eligible. It shall be redesigned to remove the trigger or withdrawn. Screening does not continue for an activity that remains ineligible.
- **Step 3: Site visit and consultation.** The PIU, supported by the E&S Consultant and relevant technical specialists, shall conduct a site visit to verify the information collected during desk review. For dam rehabilitation activities, the visit shall cover the dam and appurtenant structures, canals, access roads, likely borrow, spoil disposal and camp areas, and upstream and downstream areas that may be affected. The PIU shall coordinate consultations with the Provincial Agriculture and Environment Office (PAEO), local authorities, village representatives, Water User Groups (WUGs), and potentially affected communities, with particular attention to women, ethnic groups and vulnerable households. The consultations shall help verify land use, tenure, livelihoods, sensitive receptors and community concerns. For subprojects involving irrigation rehabilitation, the PIUs shall consult farmers, WUGs and relevant agricultural authorities to document existing cropping patterns, cropping intensity and pesticide use, and to identify downstream water bodies and users that could be affected by agricultural runoff. The PIU shall use this information to screen whether improved irrigation reliability could increase agrochemical use or runoff. Where site access, community views or key information cannot be obtained, these limitations shall be documented rather than making unsupported assumptions. For other civil works, including construction of the IWMC building and renovation of PIU offices, site visits and consultations shall be proportionate to the nature, scale and potential risks of the activities.
- **Step 4: Complete the screening form.** The team shall complete the ES Screening Form included in Annex 2 as described below.

5.1.3 How to analyze the screening results

72. The completed form shall be analyzed in the following order:

Eligibility. Confirm that no Annex 1 criterion is triggered.

Applicable ESSs. Identify the ESSs triggered

Nature, scale, location and sensitivity. Consider each risk in terms of scale, duration, reversibility and location, and its proximity to the sensitive receptors identified in the form, including reservoirs, rivers, downstream communities, command areas, protected areas, wetlands, schools, health facilities and cultural sites.

Cumulative effects. Consider combined effects, such as several works at one dam site, or the interaction between reservoir drawdown, spillway works, traffic and downstream water users.

Associated Facilities. Identify any facilities or activities that are not financed by the Project but may qualify as Associated Facilities under ESS1. Assess whether they are directly and significantly related to the Project, are carried out or planned contemporaneously with the Project, and are necessary for the Project to be viable and would not have been constructed, expanded or conducted if the Project did not exist. This

assessment should include the ADB-financed downstream irrigation channel rehabilitation at Nam Houm. Where such facilities do not meet the Associated Facilities criteria, their potential cumulative impacts and interactions with Project activities should still be assessed, as appropriate.

National approval requirements. Determine from the Ministerial Instruction whether the activity requires an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA), and identify other statutory approvals, such as an Environmental Compliance Certificate (ECC), dam safety approvals and water use permits.

Capacity. Assess whether the PMU, PIUs, contractors and supervision consultants have the capacity to implement the required measures, and identify training or technical assistance needs. Given the Substantial risk rating, capacity gaps shall be addressed before civil works begin.

Conclusion and next steps. The screener shall record the conclusion in the final section of Annex 2. The conclusion shall state: (i) whether the activity is eligible; (ii) the applicable ESSs; (iii) the risk classification and its justification; (iv) the national assessment and approval requirements; (v) the instruments to be prepared (ESIA, ESMP, C-ESMP, RP, EGEP, Dam Safety Plan, O&MP, EPP, Water Allocation Plan, Reservoir Drawdown Management Plan, and others as relevant); (vi) the additional studies needed; (vii) the consultation and disclosure requirements; and (viii) any information gaps or conditions that remain open. The conclusion shall also summarize the climate-risk findings from Part C, identify the required climate-related studies, design measures and operational plans, and assign an owner and due stage to each outstanding action. The form shall be dated and signed by the screener and approved by the PMU.

The next steps depend on the conclusion:

- **Ineligible activities** (including any activity that would be High risk) shall be redesigned to remove the exclusion trigger or dropped from the Project.
- **Activities requiring site-specific E&S assessments and management instruments** shall have a site-specific ESIA and ESMP prepared by qualified consultants, preceded by a Scoping Report and Terms of Reference (see Annex 3). The ToR and the draft ESIA shall be submitted to the World Bank for review and no objection, and the ESIA shall be cleared by the World Bank before procurement for civil works begins. A C-ESMP shall be prepared by the Contractor on the basis of the approved ESMP. Dam works shall also follow ESS4 Annex 1, including review of dam safety documents by the Panel of Experts. Independent supervision of ESMP implementation shall be provided by the ISWS, together with regular monitoring and reporting to the World Bank.
- **Activities with limited and site-specific E&S impacts.** For activities where the identified risks and impacts can be managed through standard mitigation measures, a site-specific ESMP or the Environmental and Social Code of Practice (ESCOP) provided in Annex 10 shall be applied, as appropriate, based on the screening findings. Where an ESMP is required, relevant mitigation measures shall be incorporated into the bidding documents and contracts. Contractors shall prepare a Contractor's Environmental and Social Management Plan (C-ESMP), where required, based on the approved ESMP and applicable contractual requirements.
- **Activities with land, ethnic group or cultural heritage impacts** also require an RP, EGEP or cultural heritage measures in accordance with the RPF and EGEF, and no civil works shall start in the affected area until these are implemented as required.
- **Technical assistance, studies and design activities** shall have E&S requirements integrated into their terms of reference, and shall not finance decisions or works that would make an ineligible activity go ahead.

The screening results, the instruments required, and the national approvals needed shall be integrated into the feasibility studies, DED, bidding documents and contracts, so that mitigation measures are costed and enforceable. Screening records shall be retained by the PMU and reported in the Project's E&S progress

reports. If screening or later assessment indicates that the risk of an activity or of the Project as a whole has increased (for example, to High), the PMU shall notify the World Bank promptly, and the activity shall be suspended, redesigned or withdrawn, with the ESCP and this ESMF updated as needed. Civil works shall not commence until the required instruments are approved, disclosed and cleared, the necessary permits and the ECC are obtained, and the associated land and resettlement requirements are met. Detailed requirements for the instruments are set out in the following sections of this chapter and in Annex 3.

5.2 Preparation of Site-Specific E&S Management Instruments

73. Based on the results of the environmental and social screening (**Section 5.1 and Annex 10.2**), appropriate E&S management instruments will be prepared and implemented for each subproject by the responsible implementing agencies. The type and scope of these instruments will be commensurate with the nature, scale, location, and significance of the identified environmental and social risks and impacts, and consistent with the World Bank ESF, applicable ESSs, and the laws and regulations of the Lao PDR. Depending on the ES screening outcomes, the Project may require preparation of an ESIA, ESMP, C-ESMP, CSQAP, IP, O&MP, EPP, BMP, RP, EGEP, Cultural Heritage Management Plans, LMP, and other site-specific management plans, as appropriate.

74. The climate-risk findings and actions recorded in **Annex 10.2**, Part C shall inform the scope of applicable studies, detailed design, ESIA, ESMP, C-ESMP and operational plans. Relevant hydrological, dam safety and water-balance assessments shall document their climate assumptions and uncertainties. Each resulting measure shall identify its responsible party, implementation stage and means of verification.

75. Where the Project finances technical assistance, policy development, river basin planning, institutional strengthening, feasibility studies, engineering designs, or other strategic activities for which downstream impacts cannot yet be fully defined, the relevant Terms of Reference shall incorporate the requirements of the applicable ESSs and GIIP, and additional strategic environmental and social assessments or other environmental and social instruments shall be prepared where required.

76. The following sections describe the purpose, scope, preparation requirements, and implementation arrangements for each environmental and social management instrument that may be required under the WISER Project.

- **Site-Specific Environmental and Social Impact Assessment (ESIA).** The ESIA shall be prepared for subprojects where the nature, scale, or significance of potential environmental and social risks requires a comprehensive assessment under ESS1 and applicable national regulations. The ESIA shall assess direct, indirect, induced, cumulative, and residual impacts associated with rehabilitation of irrigation dams, reservoirs, spillways, outlet structures, irrigation conveyance systems, and associated facilities. It shall also assess dam safety, downstream community safety, water balance, environmental flows, biodiversity, land acquisition, pest management, labour, CHS, cultural heritage, ethnic groups, climate risks, and cumulative impacts. Appropriate mitigation measures shall be incorporated into the Project design and ESMP. The ESIA shall be prepared during the feasibility study and detailed engineering design and reviewed and cleared by the World Bank prior to commencement of procurement for civil works. Guidance and the ESIA template are provided in Annex 3.
- **Site-Specific Environmental and Social Management Plan (ESMP).** The ESMP shall translate the findings of the ESIA and environmental and social screening into site-specific mitigation measures, monitoring requirements, institutional responsibilities, implementation arrangements, schedules, and budgets for managing environmental and social risks during design, construction, operation, and maintenance. As appropriate, the ESMP shall incorporate Main Construction E&S Management

Plan, TMPs, CHSP, LMP-OHS Plans, Worker Camp Management Plan, WMPs, BMPs, Cultural Heritage Management Measures including CFP, Borrow Pit, Quarry, Spoil Management Plan, Stakeholder Engagement and GRM procedures, Emergency Response Procedures, Instrumentation Plans, Water Allocation Plans, and other management measures identified through the environmental and social screening and assessment process. Guidance and the ESMP template are provided in Annex 3.

- **Contractor Environmental and Social Management Plan (C-ESMP).** The contractor shall prepare the C-ESMP, consistent with the approved SS-ESMP, within 60 days after contract award and in any event before mobilization to site and before commencement of civil works. The C-ESMP shall describe the Contractor's detailed procedures for implementing all environmental, social, health, and safety requirements during construction and shall include, as appropriate, Main Construction E&S Management Plan, TMPs, CHSP, LMP-OHS Plans, Worker Camp Management Plan, WMPs, BMPs, Cultural Heritage Management Measures including CFP, Borrow Pit, Quarry, Spoil Management Plan, Stakeholder Engagement and GRM procedures, Emergency Response Procedures, Reservoir Drawdown Management Plans, Instrumentation Plans, and other site-specific management measures required to manage construction-related environmental and social risks. The C-ESMP shall be reviewed by the ISWS and approved by the PMU before contractor mobilization. Guidance and the C-ESMP template are provided in Annex 3.
- **Emergency Preparedness Plan (EPP).** An EPP shall be prepared for each rehabilitated irrigation dam in accordance with ESS4 Annex 1 (Safety of Dams), the Dam Safety Law No. 52/NA (2022), and applicable national dam safety guidelines. The EPP shall be informed by the findings of the Dam Break Analysis and associated inundation mapping, and shall establish emergency classifications, notification procedures, communication protocols, emergency response arrangements, downstream warning systems, evacuation procedures, emergency contact lists, coordination with national and local disaster management authorities, institutional responsibilities, training, simulation exercises, emergency drills, and periodic review and updating procedures to protect downstream communities and infrastructure in the event of dam safety incidents or potential dam failure. An EPP Framework (EPPF) has been prepared as the basis for the dam-specific EPPs and is provided in Annex 4. The EPPF is prepared at project appraisal and defines the minimum content, structure, institutional roles, emergency classification approach and procedures that every EPP must follow. The dam-specific EPPs will be prepared by the DED Consultant during implementation, using the EPPF and the Dam Break Analysis results as the technical basis.
- **Operation and Maintenance Plan (O&MP).** An O&MP shall be prepared for each rehabilitated irrigation dam to establish procedures for the safe operation, routine inspection, preventive and corrective maintenance, surveillance, instrumentation monitoring, reservoir and gate operation, sediment management, inspection schedules, maintenance programmes, staffing requirements, reporting arrangements, budgeting, and institutional responsibilities throughout the operational life of the dam and associated irrigation infrastructure. An O&MP outline has been prepared as the basis for the preparation of the dam-specific O&MPs under implementation and is provided in Annex 5.
- **Instrumentation Plan (IP).** An IP shall be prepared separately for each of the three rehabilitated irrigation dams to set out the instruments to be installed, repaired or replaced to monitor and record the behavior of the dam and its foundation, together with related hydrometeorological, structural and, where relevant, seismic factors. It shall specify instrument types and locations, installation and protection requirements, baseline readings, monitoring frequencies, alert and

action thresholds, data management and reporting procedures, calibration and maintenance requirements, and institutional responsibilities. The IP shall be consistent with the findings of the dam safety assessments, and its monitoring arrangements shall be incorporated into the dam's O&MP and EPP. The IP will be prepared by the DED Consultant during the DED stage and must be completed before the rehabilitation works are tendered.

- **Construction Supervision and Quality Assurance Plan (CSQAP)**. A CSQAP shall be prepared separately for each of the three rehabilitated irrigation dams to set out the organization, staffing levels, qualifications, procedures and equipment required to supervise the remedial works and to assure the quality of construction, including quality control testing of materials and workmanship, inspection and hold points, handling of non-conformities and design changes, record-keeping and reporting, and the interface with the ISWS, the Contractor, the PMU and the PoE. The CSQAP shall also address the management of dam safety risks during construction, including reservoir drawdown and temporary works. The CSQAP will be prepared by the DED Consultant during implementation at the DED stage and needs to be completed before the rehabilitation works are tendered, so that its requirements are reflected in the bidding documents, the ISWS terms of reference and the construction contracts.
- **Biodiversity Management Plan (BMP).** Where screening identifies potential impacts on natural habitats, aquatic ecosystems, fisheries, ecosystem services, or biodiversity; a biodiversity assessment and a BMP shall be prepared either as a standalone document or as part of the ESMP. The assessment and BMP shall be prepared by a qualified biodiversity specialist, and apply the mitigation hierarchy and include measures to avoid, minimize, mitigate, restore, and monitor impacts on biodiversity and living natural resources in accordance with ESS6. Guidance and Biodiversity Management Plan (BMP) Template are provided in Annex 6.
- **Cultural Heritage Management Measures/ Chance Find Procedure (CFP)** provided in **Annex 7.** Where screening identifies potential impacts on cultural heritage resources, including graveyards, sacred sites, archaeological resources, or other tangible or intangible cultural heritage, appropriate Cultural Heritage Management Measures shall be prepared as part of the ESMP or as a standalone plan where necessary. The measures shall include avoidance and minimization measures, culturally appropriate consultation, protection measures, and CFP in accordance with ESS8 and applicable national legislation.
- **Unexploded Ordnance (UXO) Management Procedure** provided in **Annex 8**. UXO risk is screened for every activity involving ground disturbance.
    - Step 1: the PIU, with the E&S Consultant, reviews NRA UXO risk maps and village lists and consults village authorities (non-technical survey), and records the result.
    - Step 2: if no risk is identified, works may proceed and the evidence is filed; if risk is identified or cannot be excluded, a technical survey and, if confirmed, clearance is required.
    - Step 3: survey and clearance are carried out by an NRA-accredited operator, under a clearance plan approved by the PMU and coordinated with the NRA.
    - Step 4: the NRA issues a UXO Clearance Certificate.
    - Step 5: no civil works, borrow area, camp or access work starts in a cleared area before the certificate is issued.

  The procedure in **Annex 8** is incorporated into the SS-ESMP and C-ESMP, including chance-find procedures, awareness training and incident reporting. Where environmental and social screening identifies potential UXO contamination within the Project area, a UXO Management Procedure shall

be implemented in accordance with the National Regulatory Authority (NRA) requirements and applicable national legislation. The procedure shall include, as appropriate, UXO risk screening, consultation with relevant authorities, UXO survey and clearance by an NRA-accredited operator, issuance of a UXO Clearance Certificate prior to commencement of civil works, worker awareness training, site marking and access control, emergency response procedures, incident reporting, and monitoring requirements. No civil works shall commence until the affected areas have been declared safe by the competent authority. The UXO Management Procedure shall be incorporated into the ESMP and Contractor's C-ESMP, as appropriate.

- **Subproject Resettlement Plan (RP) or Simplified RP (S-RP).** Where land acquisition, restrictions on land use, temporary occupation, physical displacement, economic displacement, or livelihood impacts cannot be avoided, an RP shall be prepared in accordance with the RPF and ESS5. The RP shall include compensation, livelihood restoration, consultation, implementation arrangements, monitoring, budget, and grievance redress measures. Compensation and assistance shall be completed before commencement of civil works. Guidance and templates are provided in the RPF.
- **Ethnic Group Engagement Plan (EGEP).** Where ethnic groups meeting the requirements of ESS7 are present within the Project area of influence, an EGEP shall be prepared in accordance with the EGEF. The EGEP shall include culturally appropriate consultation, benefit-sharing measures, mitigation measures, and culturally appropriate grievance arrangements and application of FPIC where required. Guidance and templates are provided in the **EGEF**.
- **Labor Management Procedures (LMP) and Codes of Conduct (COC),** provided in a standalone document**. The LMP** establish the requirements for fair, safe, and equitable labor practices for all categories of project workers, including direct workers, contracted workers, and primary supply workers, in accordance with ESS2 and applicable Lao PDR labour legislation. The LMP sets out provisions on terms of employment, worker rights, nondiscrimination, grievance redress for workers, occupational health and safety (OHS), and management of labor influx. As part of LMP implementation, all contractors and project workers are required to sign and adhere to a **Code of Conduct (COC)** that defines acceptable behavior and expressly prohibits **Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH)**, violence against children, discrimination, and other misconduct. Contractors must train their workforce on COC obligations and ensure supervision, reporting, and enforcement throughout project implementation. The PIU and PMU will monitor compliance to ensure that all labor-related risks are managed in accordance with ESS2 and national labor laws.
- **Agrochemical risks associated with improved irrigation.** During subproject preparation, the PIU, supported by the E&S and FS/DED consultants and in consultation with relevant provincial and district agricultural authorities, shall use Annex 2 to screen whether improved irrigation could lead to changes in cropping intensity, cultivated area or crop mix that may increase fertilizer or pesticide use in the irrigation command area or increase the risk of runoff affecting downstream water bodies and users. The site-specific E&S assessment shall examine risks flagged during screening, including those for which available information is insufficient to determine their significance. Where the assessment identifies material risks, the site-specific ESMP shall specify proportionate mitigation and operational monitoring measures and assign implementation responsibilities. Measures shall draw on relevant Lao Good Agricultural Practices (GAP) guidelines and integrated pest management principles, as applicable.

- **Technical Assistance Activities.** For technical assistance activities under **Component 2**, including preparation of dam safety regulations, River Basin Profiles, River Basin Management Plans, technical studies, operational procedures, institutional reforms, and other strategic planning activities, the Terms of Reference and outputs shall be reviewed to ensure consistency with the applicable ESSs. Environmental and social considerations shall be integrated into all technical assistance outputs, and additional environmental and social assessments shall be undertaken where required by this ESMF.

77. The PMU, with support from CMU, PIUs, ISWS, qualified E&S consultants and firms, and the Panel of Experts, shall coordinate the preparation, review, implementation, and monitoring of all required environmental and social instruments.

78. All required environmental and social instruments shall be prepared, consulted upon, disclosed, reviewed, adopted, and implemented before commencement of the relevant Project activities, in accordance with the ESCP. Relevant mitigation measures and environmental and social obligations shall be incorporated into detailed engineering designs, procurement documents, bidding documents, and civil works contracts. Implementation and compliance shall be monitored by the PMU, CMU, PIUs, ISWS, contractors, and the World Bank throughout Project implementation. Climate-resilient design measures identified through climate risk screening and assessment shall be incorporated into detailed engineering designs, technical specifications, bills of quantities, bidding documents, and civil works contracts, and shall be reviewed by the Panel of Experts and the E&S Consultant. Before detailed design and bidding documents are approved, the PMU shall verify that material climate-risk actions identified at screening have been addressed in the applicable assessments, design, contracts and management plans. Any outstanding action shall have an assigned owner and due date.

6. IMPLEMENTATION ARRANGEMENTS

79. This chapter describes the arrangements for managing E&S risks and impacts during implementation and after completion (operation and maintenance) of all WISER-supported activities. The ESMF for the WISER Project will be implemented through the existing institutional structure of the Government of the Lao PDR, comprising national, provincial, and technical agencies (Figure 6-1). Overall strategic guidance and oversight will be provided by the **Project Steering Committee (PSC)**, chaired by the Vice Minister of the MAE and co-chaired by the Vice Governors of Vientiane Capital, Vientiane Province, and Oudomxay Province. The **Department of Irrigation (DOI)** under MAE will serve as the **Project Management Unit (PMU)** and act as the Secretariat to the PSC. The PMU will be responsible for overall Project coordination, planning, management, procurement, financial management, environmental and social risk management, monitoring and evaluation, and reporting. The PMU will be supported by implementation support consultants, technical specialists, and an independent **Panel of Experts (PoE)** for dam safety, together with additional consultants engaged as required. The **Department of Water Resources (DWR)** will establish a **Component Management Unit (CMU)** to implement **Sub-Component 2.2 (River Basin Planning and Management)**, while the **Provincial Agriculture and Environment Offices (PAEOs)** of Vientiane Capital, Vientian Province and Oudomxay Province will each establish a **Project Implementation Unit (PIU)** to implement provincial-level activities under Component 1, including environmental and social management, monitoring, reporting, and coordination with relevant provincial agencies. The Project will also be supported by an **Implementation Support and Work Supervision Consultant (ISWS)** to supervise civil works and monitor compliance with environmental and social requirements during implementation. The Project will be implemented in accordance with the **Project Operations Manual (POM)**, which defines detailed implementation arrangements, including procurement, financial management, environmental and

social risk management, monitoring, reporting, and implementation of the CERC and will be finalized at the project negotiations stage. Dedicated **Environmental and Social Focal Points (ESFPs)** and qualified environmental and social specialists will support the PMU, CMU, PIU, and ISWS to ensure consistent implementation of the ESMF, ESCP, and other environmental and social instruments throughout the Project lifecycle. The roles and responsibilities of the implementing agencies for ESMF implementation are described below.

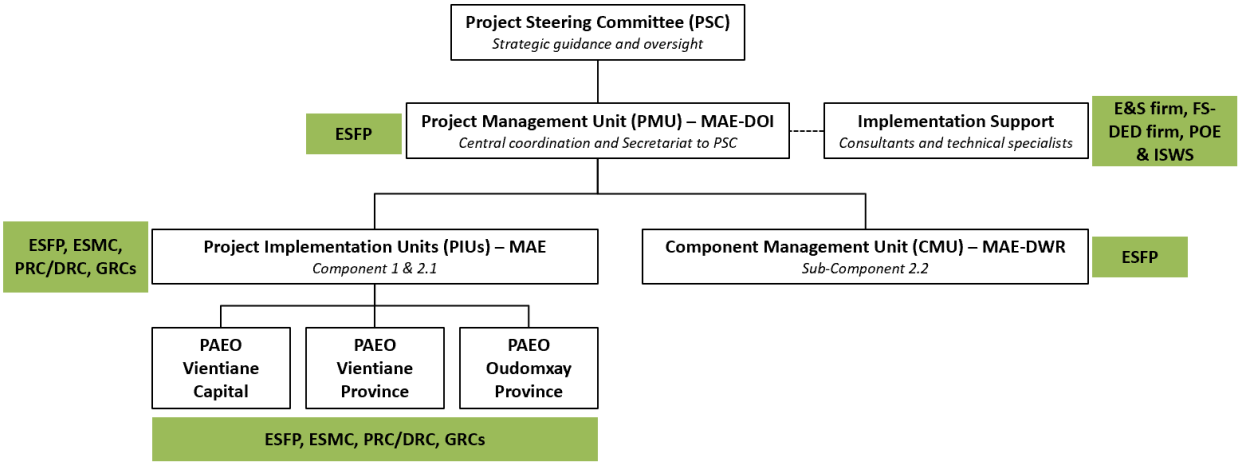


Figure 6-1 Implementation Arrangements

6.1 Project Steering Committee (PSC)

80. The **Project Steering Committee (PSC)**, chaired by the **Vice Minister of the MAE** and co-chaired by the Vice Governors of Vientiane Capital, Vientiane Province, and Oudomxay Province, will provide overall strategic guidance, policy direction, and oversight for Project implementation. The PSC will meet at least annually, or as required, to review Project progress, implementation issues, environmental and social performance, dam safety matters, and key policy decisions. The PSC will receive implementation progress reports from the PMU and provide guidance to facilitate effective coordination among implementing agencies.

6.2 Project Management Unit (PMU) –DOI

81. The Department of Irrigation (DOI) under the MAE serves as the PMU and acts as the Secretariat to the PSC. The PMU is headed by the Director General of DOI and comprises representatives from the Department of Finance (Provincial Administration Office), MAE-DWR, MAE-DMH, MAE Cabinet Office, MPWT-DWS, and the Ministry of Finance Public Debt Management Department. The PMU is the central coordinating agency responsible for overall Project implementation, including annual work plans and budgets, procurement, financial management, environmental and social risk management, monitoring and evaluation, reporting, and coordination among all implementing agencies.

82. The PMU will be supported by qualified E&S firm and ISWS covering Project coordination, procurement, financial management, monitoring and evaluation, environmental and social management, dam safety, and other technical disciplines. Additional consultants may be recruited as required to strengthen implementation capacity. Core ESMF responsibilities include:

- Coordinate overall implementation of the ESMF, ESCP, SEP, LMP, RPF, EGEF, and other environmental and social instruments.
- Ensure compliance with the World Bank ESF, applicable ESSs, and Lao PDR legislation.
- Coordinate environmental and social management across all Project components.

- Ensure environmental and social screening is undertaken for all proposed subprojects.
- Review and approve site-specific environmental and social instruments before submission to the World Bank and relevant government authorities.
- Coordinate preparation, consultation, disclosure, implementation, and monitoring of ESIAs, ESMPs, C-ESMPs, O&MPs, EPPs, RPs, EGEPs, BMPs, and other required instruments.
- Lead implementation of the RPF and site-specific RPs and be accountable for delivery. Confirm entitlements and livelihood restoration packages with the competent authorities and affected people, secure budgets and the release of funds, and verify that the required compensation and assistance are provided before authorizing land entry, clearance, or works in affected areas. Record the responsible delivery units, funding arrangements and approval steps in the Project Operations Manual and each RP.
- Ensure environmental and social requirements are integrated into feasibility studies, detailed engineering design, procurement documents, contracts, and implementation.
- Coordinate implementation of ESCP commitments.
- Manage Project-level stakeholder engagement and grievance redress mechanisms.
- Consolidate environmental and social monitoring reports and submit them to the World Bank.
- Notify the World Bank of environmental and social incidents and accidents in accordance with the ESCP.
- Coordinate environmental and social capacity building for implementing agencies.
- Support World Bank implementation support missions, audits, and Project evaluations.
- Maintain Project environmental and social records and documentation.

6.3 Component Management Unit (CMU) –DWR

83. The Department of Water Resources (DWR) under MAE serves as the Component Management Unit (CMU) responsible for implementation of Sub-component 2.2 – River Basin Planning and Management. The CMU is responsible for day-to-day implementation of Component 2.2, while procurement and fiduciary management are undertaken by the PMU. Core ESMF responsibilities include:

- Implement Component 2.2 in accordance with the ESMF, ESCP, and applicable ESSs.
- Prepare Terms of Reference and technical specifications for consulting services.
- Manage contracts and monitor implementation progress.
- Ensure environmental and social screening of Component 2.2 activities.
- Integrate environmental and social considerations into River Basin Profiles and River Basin Management Plans.
- Conduct stakeholder engagement and consultations.
- Monitor implementation of environmental and social commitments.
- Submit implementation progress reports to the PMU.
- Maintain environmental and social documentation for Component 2.2.

6.4 Project Implementation Units (PIUs)

84. Three Project Implementation Units (PIU)s will be established within the Provincial Agriculture and Environment Office (PAEO) of Vientiane Capital, Vientiane Province and Oudomxay Province. Similar PIUs may be established in other provinces during future phases of the MPA. The PIU is responsible for day-to-day implementation of provincial activities, including annual work plans, coordination of civil works, financial management, environmental and social management, monitoring, reporting, and coordination with provincial authorities. Core ESMF responsibilities include:

- Implement project activities in accordance with the ESMF and approved environmental and social instruments.
- Conduct environmental and social screening of subprojects.
- Coordinate preparation and implementation of ESIAs, ESMPs, C-ESMPs, O&MPs, EPPs, RPs, EGEPs, BMPs, and other required instruments.
- Coordinate implementation of land acquisition, compensation, livelihood restoration, and stakeholder engagement where applicable.
- Lead field preparation and delivery of RPs under PMU oversight. Work with the responsible land administration offices and resettlement committees on the census, detailed measurement, eligibility and valuation. Consult affected households on practical livelihood options and arrange delivery of compensation and assistance through the designated authorities. Deliver livelihood restoration with relevant service providers, verify receipt and follow up on livelihood outcomes.
- Ensure environmental and social requirements are incorporated into procurement documents and contracts.
- Supervise contractor implementation of approved environmental and social instruments.
- Conduct routine environmental and social inspections.
- Coordinate with provincial departments, Water User Groups, village authorities, and affected communities.
- Operate the local Project GRM.
- Submit environmental and social monitoring reports to the PMU.
- Immediately notify the PMU of significant incidents or accidents.
- Support environmental and social training and awareness programmes.
- Participate in World Bank supervision missions and audits.

6.5 Panel of Experts (PoE)

85. In accordance with **ESS4 Annex 1**, the Project will establish an independent **Panel of Experts (PoE)** comprising qualified dam safety specialists to provide independent technical advice throughout Project preparation and implementation.The PoE will review the safety of the rehabilitation works and advise the PMU and the World Bank on dam safety issues associated with the Project. Core responsibilities include:

- Review dam safety investigations, feasibility studies, and detailed engineering designs.
- Review structural assessments, spillway adequacy, seepage analyses, sedimentation assessments, reservoir operation studies, and hydrological analyses.
- Review Dam Safety Plans, including Dam Break Analysis (DBA), dam breach modelling, inundation mapping, downstream consequence assessment, and emergency preparedness arrangements.
- Review Operation and Maintenance Plans and Emergency Preparedness Plans.
- Review instrumentation and monitoring programmes.
- Conduct periodic site visits during construction.
- Review construction quality and dam safety performance.
- Advise on corrective actions where deficiencies are identified.
- Provide independent recommendations to the PMU and the World Bank on dam safety matters.

6.6 Environmental and Social Monitoring Committee (ESMC)

86. The Environmental and Social Monitoring Committee (ESMC), the Provincial and District Resettlement Committees (PRC/DRC) and the Grievance Redress Mechanism Committees (GRMC) shall be established at each provincial level within 90 days after the Effective Date, in accordance with Action A of the ESCP, and maintained throughout Project implementation. The ESMC shall also oversee compliance with the ECC conditions once the ECC is issued. Core responsibilities include:

- Oversee implementation of the ECC conditions, ESMF, ESMPs, C-ESMPs, and other applicable environmental and social instruments.
- Monitor compliance with applicable environmental and social laws, regulations, permits, and the World Bank ESF.
- Conduct periodic site inspections and review environmental and social performance.
- Review environmental and social monitoring reports and recommend corrective actions for non-compliance.
- Coordinate with the PMU, PIUs, ISWS, contractors, and relevant government agencies on environmental and social matters.
- Monitor implementation of corrective and preventive actions and follow up on outstanding issues.
- Report environmental and social performance to the PMU and relevant regulatory authorities, as required.

6.7 Provincial and District Resettlement Committees (PRC/DRC)

87. Provincial and District Resettlement Committees (PRC/DRC) shall be established and maintained in accordance with national regulations to oversee implementation of land acquisition and resettlement activities under the Project. The PRC/DRC shall provide statutory oversight and carry out verification and other functions assigned under the RPF and site-specific RPs. Core responsibilities include:

- Verify affected persons, affected assets, and eligibility for compensation and assistance.
- Oversee implementation of compensation, livelihood restoration, and resettlement activities.
- Ensure compensation and assistance are completed prior to commencement of civil works.
- Coordinate consultations with affected persons and local authorities.
- Monitor implementation of resettlement activities and maintain relevant records.
- Support resolution of land acquisition and resettlement-related grievances.

6.8 Grievance Redress Committees (GRCs)

88. Grievance Redress Committees (GRCs) shall be established and maintained at the provincial level to receive, assess, and resolve Project-related grievances in accordance with the SEP and Project GRM. The GRCs are responsible for managing Project grievances throughout implementation. Core responsibilities include:

- Receive, register, assess, and resolve Project-related grievances.
- Ensure grievances are addressed in a timely, transparent, and fair manner.
- Maintain grievance records and monitor resolution status.
- Refer SEA/SH-related grievances through confidential survivor-centred referral pathways.
- Escalate unresolved grievances to the PMU where necessary.
- Report grievance statistics, trends, and unresolved cases through the Project monitoring and reporting system.

6.9 Environmental and Social Consultant (Firm)

89. The PMU shall appoint and maintain an Environmental and Social Consultant (Firm) with qualified environmental and social specialists to provide technical assistance for implementation, supervision, quality assurance, monitoring, reporting, and capacity building throughout Project implementation. The Environmental and Social Consultant (Firm) shall support the PMU, CMU, and PIUs in implementing the ESMF and other environmental and social instruments. Core responsibilities include:

- Provide technical support on implementation of the ESMF, ESCP, and applicable ESSs.

- Support environmental and social screening and preparation of site-specific E&S instruments.
- Review and provide quality assurance of E&S plans, bidding documents (BDs), and contract documents (CDs) prepared by the FS & DED Consultant to ensure compliance with the ESF, ESSs, ESMF, ESCP, and national requirements.
- Review and oversee the environmental and social performance of the ISWS, including supervision, monitoring, reporting, and implementation of corrective actions.
- Monitor implementation of ESMPs, C-ESMPs, RPs, EGEPs, O&MPs, EPPs, and other applicable plans, and recommend corrective actions where necessary.
- Conduct periodic E&S monitoring, compliance audits, and field inspections.
- Assist the PMU in preparing E&S monitoring reports, ESIRT notifications, and other reports required by the Government and the World Bank.
- Deliver capacity building and on-the-job mentoring for the PMU, CMU, PIUs, ESMC, PRC/DRC, GRCs, ISWS, Contractors, and other relevant agencies.
- Support stakeholder engagement, grievance management, adaptive management, and implementation of corrective and preventive actions.
- Support World Bank implementation support missions, audits, and environmental and social reviews.
- Maintain Project E&S documentation and recommend continual improvements in line with GIIP.

6.10 Feasibility Study and Detailed Engineering Design (FS & DED) Consultant

90. The FS & DED Consultant shall support the PMU during Project preparation and implementation by undertaking feasibility studies, detailed engineering design, environmental and social assessments, and preparation of site-specific environmental and social instruments for rehabilitation of irrigation dams and associated infrastructure. The Consultant shall ensure that engineering designs incorporate environmental and social considerations, dam safety requirements, climate resilience, and Good International Industry Practice (GIIP) in accordance with the World Bank ESF and applicable laws and regulations of Lao PDR. Core ESMF responsibilities include:

- Undertake environmental and social screening of proposed subprojects in accordance with the ESMF.
- Identify applicable ESSs, national regulatory requirements, and required environmental and social instruments.
- Prepare and update feasibility studies and detailed engineering designs incorporating environmental, social, climate resilience, and dam safety considerations.
- Prepare ESIAs, ESMPs, CSQAPs, IPs, O&MPs, EPPs, RPs, EGEPs, BMPs, and other site-specific environmental and social instruments required under the ESMF and national legislation.
- Undertake baseline surveys, environmental and social assessments, biodiversity assessments, cultural heritage assessments, stakeholder consultations, and socioeconomic surveys required for preparation of site-specific instruments.
- Undertake dam safety investigations, including structural assessments, hydrological and hydraulic analyses, spillway adequacy assessments, seepage assessments, sedimentation assessments, instrumentation assessments, Dam Break Analysis (DBA), dam breach modelling, inundation mapping, downstream consequence assessments, and risk assessments in accordance with ESS4 Annex 1 and the Dam Safety Law.
- Integrate environmental and social mitigation measures into engineering designs, technical specifications, Bills of Quantities (BOQs), and bidding documents (BD) and contract documents (CD).
- Incorporate climate risk screening and climate-resilient design measures into rehabilitation designs.

- Identify opportunities to avoid or minimize land acquisition, impacts on livelihoods, biodiversity, cultural heritage, and downstream communities through design optimization.
- Identify natural rock formations in a stream receiving reservoir releases, assess whether proposed works or changes in discharge could damage or alter them, including through scour.
- Identify and verify bridge condition, load capacity and clearance against the anticipated construction vehicles and loads and reflect these in the site-specific ESMP.
- Prepare cost estimates for implementation of environmental and social mitigation measures and ensure these are reflected in Project budgets and bidding documents.
- Support the PMU during review and approval of environmental and social instruments by the World Bank and relevant government authorities.
- Revise environmental and social instruments, as necessary, following comments from the PMU, World Bank, Panel of Experts (PoE), and government agencies.
- Support disclosure of environmental and social instruments and participate in stakeholder consultations.
- Provide technical support during procurement by responding to environmental and social queries from bidders.
- Provide technical support during construction, where required, to clarify environmental, social, and dam safety design requirements and support management of design changes.

6.11 Implementation Support and Work Supervision Consultant (ISWS)

91. The Project will recruit an Implementation Support and Work Supervision Consultant (ISWS) to support implementation and supervise rehabilitation works under Component 1. The ISWS shall include qualified specialists in environmental management, social development, occupational health and safety, dam safety, water resources, and engineering. The ISWS will provide day-to-day technical support to the PMU and PIUs and independently monitor contractor compliance with all approved environmental and social instruments. Core ESMF responsibilities include:

- Review contractor C-ESMPs before commencement of works.
- Supervise implementation of approved C-ESMPs and associated management plans.
- Verify compliance with ESMPs, CSQAPs, IPs, O&MPs, EPPs, BMPs, RPs, EGEPs, and other approved environmental and social instruments.
- Monitor contractor performance on environmental protection, pollution prevention, OHS, CHS, traffic management, biodiversity conservation, stakeholder engagement, and dam safety.
- Verify implementation of compensation and livelihood restoration prior to commencement of civil works where applicable.
- Conduct routine environmental and social inspections, compliance monitoring, and audits.
- Review contractor monitoring reports and recommend corrective actions.
- Submit regular environmental and social supervision reports to the PMU and PIU.
- Immediately report significant incidents, accidents, dam safety concerns, or environmental and social non-compliance.
- Support stakeholder engagement and grievance management during construction.
- Provide on-site coaching and capacity building to contractors and PIU staff.
- Support World Bank implementation support missions and environmental and social audits.

6.12 Contractors

92. Contractors shall be fully responsible for implementing all environmental and social requirements specified in the contract documents, approved C-ESMPs, and all other applicable environmental and social

instruments. Each contractor shall appoint qualified Environmental, Social, Health and Safety (ESHS) personnel with sufficient authority and resources to implement environmental and social requirements throughout construction. Core ESMF responsibilities include:

- Prepare, implement, and update C-ESMPs before commencement of works.
- Implement all mitigation measures specified in the approved ESMPs and associated environmental and social instruments.
- Implement all management plans incorporated into the C-ESMP, including TMP, OHS Plan, WMP, Spoil Disposal Plan, Borrow Area and Quarry Management Plan, Worker Camp Management Plan, Erosion and Sediment Control Plan, Pollution Prevention Plan, Hazardous Materials Management Plan, CHS Plan, Instrumentation Plan, Emergency Response Procedures, Stakeholder Engagement and Grievance Management Procedures, and any additional plans identified through screening and assessment.
- Implement dam safety measures specified in the DSPs, including recommendations from the DBA, reservoir operation procedures, instrumentation and monitoring, emergency preparedness arrangements, and downstream safety measures.
- Comply with the approved CSQAP, IP, O&MP and EPP during rehabilitation works affecting dam operations.
- Implement the LMP, including worker welfare, worker GRM, prohibition of child and forced labour, and Codes of Conduct.
- Assign qualified ESHS personnel to oversee daily implementation and reporting.
- Provide PPE, safety equipment, first aid facilities, and emergency response arrangements.
- Conduct induction and regular training on OHS, CHS, dam safety, emergency response, SEA/SH prevention, communicable diseases, Codes of Conduct, and environmental protection.
- Properly manage construction camps, borrow areas, spoil disposal sites, access roads, hazardous materials, wastewater, waste, dust, noise, and erosion.
- Protect water quality, aquatic habitats, downstream water users, and environmental flows during construction.
- Implement Chance Find Procedures where cultural heritage resources are encountered.
- Maintain regular communication with affected communities and cooperate in stakeholder engagement activities.
- Operate worker grievance mechanisms and cooperate with the Project GRM.
- Immediately notify the ISWS and PIU of any environmental, social, health and safety incidents, dam safety concerns, emergencies, or SEA/SH allegations.
- Submit regular environmental and social monitoring reports to the ISWS and PIU.
- Cooperate fully with inspections, audits, monitoring missions, and corrective actions undertaken by the PMU, PIU, ISWS, PoE, government authorities, and the World Bank.

6.13 Capacity Assessment and Capacity Building

93. The DOI/PMU, DWR/CMU, and other agencies under the MAE have experience implementing irrigation, water resources, and World Bank-financed projects. However, the WISER Project introduces additional requirements under the World Bank ESF, the Dam Safety Law (2022), and GIIP for dam safety and integrated water resources management. The Project also establishes new institutional arrangements, including the Irrigation Water Management Center, Environmental and Social Monitoring Committees (ESMCs), Provincial and District Resettlement Committees (PRC/DRC), and Grievance Redress Committees (GRCs), together with strengthened implementation of dam safety regulations and river basin planning and management.

94. Although the implementing agencies have sound technical experience, additional capacity is required to effectively implement the ESF, particularly in environmental and social screening, preparation and implementation of site-specific E&S instruments, dam safety management, stakeholder engagement, labor management, biodiversity conservation, community health and safety, emergency preparedness, monitoring, reporting, resettlement, and grievance management. Capacity strengthening is also required for the ESMCs, PRC/DRC, GRCs, and provincial agencies responsible for implementation of Component 1.

95. To address these capacity needs, the PMU will engage qualified E&S firm, the FS & DED Consultant, ISWS, the PoE, and other technical specialists to provide technical assistance, mentoring, and training throughout Project implementation. Capacity building will be delivered through workshops, classroom training, on-the-job coaching, field demonstrations, simulation exercises, and regular supervision.

96. Training will target the PMU, CMU, PIUs, ESMCs, PRC/DRC, GRCs, ISWS, Contractors, Water User Groups (WUGs), dam operators, local authorities, and other relevant stakeholders to ensure effective implementation of the ESMF, ESCP, and other environmental and social instruments throughout the Project lifecycle.

97. A preliminary capacity needs assessment was undertaken during preparation of the ESMF. The proposed capacity building programme is summarized in **Table 6-1**.

Table 6-1: ES Capacity Building Plan

Target Group	Capacity Building Topics / Measures	Trainer / Lead Entity	Timing
PMU, CMU, PIUs, ESMCs, PRC/DRC and GRCs	• ESF and applicable ESSs • ESCP, ESMF, SEP, LMP, RPF and EGEF • E&S screening and risk classification • Preparation and implementation of ESIAs, ESMPs, C-ESMPs, RPs and EGEPs • Monitoring, reporting, ESIRT • Stakeholder engagement and GRM • Climate risk screening	E&S firm, FS & DED Consultant	Prior to implementation
PMU, PIUs, ISWS, PoE and Dam Safety Personnel	• Dam Safety Law (2022) • ESS4 Annex 1 • CSQAPs, IPs, O&MPs and EPPs • Dam Break Analysis (DBA) • Dam inspection • Instrumentation and monitoring • Reservoir operation • Emergency preparedness	FS & DED Consultant, PoE, E&S firm	Prior to design completion and periodically during implementation
CMU and Water Resources Agencies	• Integrated Water Resources Management (IWRM) • River Basin Planning • Water Allocation Plans • Environmental flows • Water accounting • Climate resilience	FS & DED Consultant, E&S firm	During Component 2 implementation
ISWS	• Supervision of ESMPs and C-ESMPs • Contractor ESHS compliance • Environmental and social monitoring • OHS, CHS and dam safety supervision • ESIRT	E&S firm, FS & DED Consultant	Prior to construction and annually

Target Group	Capacity Building Topics / Measures	Trainer / Lead Entity	Timing
Contractors and Subcontractors	• C-ESMP implementation • OHS and CHS • CoC and SEA/SH prevention • Waste, pollution and hazardous materials management • TMP • Biodiversity protection • CFP • Emergency response • Worker GRM	ISWS, E&S firm	At mobilization and quarterly thereafter
WUGs, Dam Operators and Local Authorities	• O&MP implementation • Reservoir operation • Water allocation • Routine inspection • Instrumentation monitoring • Emergency preparedness	FS & DED Consultant, PoE, ISWS	Prior to commissioning and periodically during operation
Provincial and District Authorities, ESMCs, PRC/DRC and GRCs	• Roles and responsibilities • Land acquisition and livelihood restoration • Stakeholder engagement • GRM • E&S monitoring • Emergency preparedness	E&S firm, FS & DED Consultant	Prior to implementation and annually
Communities and WUGs	• Project awareness • Dam safety • Emergency preparedness • CHS • Environmental protection • Water conservation • GRM	ISWS, Contractors	Prior to commencement of works and periodically during implementation
All Implementing Agencies	• Lessons learned • E&S performance review • Corrective action planning • GIIP • Adaptive management	E&S firm, FS & DED Consultant, ISWS	Annually and at Mid-Term Review

7. STAKEHOLDER ENGAGEMENT, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM (GRM)

7.1 Stakeholder Engagement

7.1.1 Requirements of Stakeholder Consultation

98. In accordance with ESS10, the WISER Project will establish and maintain an open, transparent, inclusive, and continuous stakeholder engagement process throughout the Project lifecycle. Meaningful consultation will be undertaken during project preparation, detailed design, implementation, operation, and monitoring to ensure that stakeholders are informed, have opportunities to provide feedback, and participate in decisions affecting them. Particular attention will be given to women, ethnic groups, Water User Groups (WUGs), vulnerable households, downstream communities, and other potentially affected

stakeholders. Stakeholder engagement activities, information disclosure, and grievance management shall be implemented in accordance with the SEP.

7.1.2 Summary of Stakeholder Consultations during Project Preparation

99. During project preparation, various stakeholder consultations were conducted between March through December 2025 (See Summary Table below). More details are provided in Stakeholder Engagement Plan (SEP).

Table 7-1: Overview of stakeholder consultations held to date

No	Date	Reservoir	Consultation Type	Location / Village	Stakeholder Group	Ethnic Group	Male	Female	Total	Key Purpose of Consultation Meeting	Key Feedback / Main Issues Raised
A	First round of consultation aims to understand farmers' profiles, farming practices, irrigation difficulties, and implication for future agricultural production										
1	4 Mar 2025	Nam Houm	Government consultation	Vientiane Capital	DOI, PAFO, DONRE, Irrigation Service Center and provincial government agencies	N/A	6	0	6	Discuss current irrigation performance, water resource management, Water User Groups, upstream land use, future water demand, and opportunities for dam rehabilitation to improve irrigation services.	Government noted unreliable dry-season water supply, with sedimentation, upstream deforestation/land clearing and rainfall variability contributing to reduced availability while demand is increasing. WUGs were considered weak and under-trained. Priorities included dam repair, canal lining, clearer water-use rules, farmer training, and stronger management of upstream land use.
2	4 Mar 2025	Nam Houm	Focus Group Discussion	Command area (Downstream)	Rice farmers & Water User Group	Mainly Lao Loum	9	1	10	Assess irrigation performance, cropping patterns, water shortages, water conflicts, canal conditions, livelihoods, and recommendations for improving irrigation services.	Farmers reported that dry-season irrigation is unreliable because of sedimentation and broken gates, with water conflicts increasing as demand has grown. Rice is the main livelihood, supplemented by vegetables and livestock. They want more reliable gate/canal operation and timely water delivery.
3	5 Mar 2025	Nam Houm	Focus Group Discussion	Midstream command area	Rice farmers & Water User Group	Lao Loum (Dao and Hmong absent)	5	1	6	Understand irrigation access, crop production, water constraints, cropping systems, livelihoods, and priorities for improving irrigation management.	Participants said wet-season water access is generally adequate, but dry-season supply is constrained by sedimentation, erosion and broken earth canals; conflicts occur when water is scarce and access is worse than 10 years ago. They requested extension/rehabilitation of secondary and tertiary canals.
4	5 Mar 2025	Nam Houm	Focus Group Discussion	Midstream command area	Rice farmers & Water User Group	Dao and Hmong communities	7	4	11	Understand ethnic groups' dependence on irrigation, agricultural livelihoods, water access constraints, cultural considerations, and expectations for irrigation improvement.	Participants reported worsening irrigation due to old/eroded canals and sedimentation. Dry-season scarcity creates upstream-downstream conflicts, some farms are not reached by canals, and growing livestock/chicken-farm water use adds pressure. WUG coordination and fee collection were also described as weak.
5	6 Mar 2025	Nam Suang	Focus Group Discussion	Phoxay Village (Upstream)	Rice farmers & Water User Group	Hmong	2	2	4	Assess irrigation access, farming systems, livelihoods, Hmong community characteristics, and impacts of irrigation on ethnic households.	Hmong households are diversified around rubber, cassava and subsistence rice; only a small number farm within the command area. Farmers said reliable water and better canals could enable a second crop, while cucumber offers stronger dry-season returns. Current command-area users reported pipe access with little conflict.
6	6 Mar 2025	Nam Suang	Focus Group Discussion	Nady Village (Midstream)	Rice farmers & Water User Group	Lao Loum	7	1	8	Discuss irrigation performance, water availability, canal conditions, crop production, water conflicts, and measures to improve irrigation efficiency.	Farmers identified inadequate tertiary canals, sedimentation/holes and railway blockage as major constraints; some households rely on costly pumping and others receive wastewater from nearby fish farms, affecting rice quality. They requested canal repair/new canals, improved water flow and seed varieties, and better control of upstream water abstraction.

No	Date	Reservoir	Consultation Type	Location / Village	Stakeholder Group	Ethnic Group	Male	Female	Total	Key Purpose of Consultation Meeting	Key Feedback / Main Issues Raised
7	11 Mar 2025	Nam Hin	Government consultation	Muang Xai District, Oudomxay Province	DOI, DAFO, Provincial Irrigation Department, Planning and Investment	N/A	5	0	5	Review reservoir operation, irrigation expansion, Water User Groups, upstream watershed management, reservoir management, fisheries, greenhouse development, and future rehabilitation priorities.	Government highlighted that urban expansion and road works have reduced the irrigated area and disrupted canals, while demand from greenhouses, fish ponds, livestock and cash crops is rising. Priorities were canal rehabilitation/extension, stronger WUG and reservoir management, and attention to upstream deforestation/encroachment, fisheries and waste/pesticide pressures.
8	12 Mar 2025	Nam Hin	Focus Group Discussion	Upstream	Rice farmers & Water User Group	Lao Loum	8	1	9	Assess irrigation performance, cropping systems, water constraints, livelihoods, and priorities for improving irrigation infrastructure.	Rice farming was reported as a core livelihood, with irrigated sticky/ordinary rice and some vegetables/cassava. Farmers emphasized the importance of reliable seasonal water allocation and functioning WUG/canal management to sustain production.
9	12 Mar 2025	Nam Hin	Focus Group Discussion	Upstream	Fishing households	Khmu	6	1	7	Understand dependence on reservoir fisheries, seasonal fishing patterns, livelihoods, reservoir management, and impacts of future dam rehabilitation on fishing households.	Fishing is a major livelihood and food source for the Khmu community, but participants reported declining fish resources, competition and illegal electrofishing/predatory-fish pressures. They requested measures to recover fish stocks and support diversified livelihoods such as poultry, pigs and cattle, alongside corn/upland rice.
10	12 Mar 2025	Nam Hin	Focus Group Discussion	Upstream	Greenhouse & Fish Pond farmers	Khmu and Hmong	7	2	9	Assess water requirements for greenhouse farming and fish ponds, irrigation reliability, livelihood dependence, and recommendations for improving water supply.	The available consultation documentation contains little or no completed substantive feedback for this group. No reliable meeting-specific findings on greenhouse/fish-pond water access or livelihood concerns could be extracted from the record.
11	12 Mar 2025	Nam Hin	Focus Group Discussion	Downstream (30 ha command area)	Rice farmers & Water User Group	Khmu and Hmong	11	4	15	Assess downstream irrigation services, competition for water, crop production, livelihood dependence, and future water demand under dam rehabilitation.	Downstream farmers reported increasing competition for irrigation in recent years, particularly from upstream greenhouse demand, together with sedimentation. Rice yields fall when water is insufficient; participants requested PAFO-facilitated water sharing, canal extension and drought-tolerant varieties.
B	Second round of consultation aims to understand dam safety practices and perceptions of farmers and local government agencies as to dam safety										
12	31 Mar 2025	Nam Houm	Government Focus Group Discussion	Nam Houm Irrigated Service Center	DOI, PAFO, DAFO, Irrigation Service Center, PONRE, DONRE	N/A	4	4	8	Assess dam safety governance, flood history, institutional responsibilities, regulations, emergency preparedness, operation and maintenance (O&M), gender aspects, and priorities for improving dam safety management.	Agencies reported recurrent flooding, sedimentation and operational constraints, including an old intake gate that cannot be properly operated and observed dam seepage. They identified major governance gaps: no formal dam-safety inspection procedure or EPP, limited recent O&M training, and weak participation of women in dam management.
13	31 Mar 2025	Nam Houm	Farmer Focus Group Discussion	Nanad Village (Midstream)	Farmers using reservoir water	Lao Loum	2	4	6	Document farmers' experiences with floods, droughts, emergency response, dam operation, irrigation management, gender, and community preparedness for dam safety.	Farmers described frequent flooding, with severe 1995/2018 losses to rice, livestock and fish ponds, plus recurring late-wet-season dry periods affecting rice. No formal EPP exists; households rely on forecasts and Nam Ngum release notices. Community participation is mainly vegetation clearing, and women have limited roles in dam operations/safety planning.

No	Date	Reservoir	Consultation Type	Location / Village	Stakeholder Group	Ethnic Group	Male	Female	Total	Key Purpose of Consultation Meeting	Key Feedback / Main Issues Raised
14	1 Apr 2025	Nam Suang	Farmer Focus Group Discussion	Phoxay Village (Upstream)	Farmers using reservoir water	Hmong	7	4	11	Understand historical flood and spillway erosion impacts, dam safety awareness, emergency preparedness, irrigation management, and community perceptions of dam operation.	Farmers recalled major fish-pond losses in the 1995 flood and serious 2014 spillway-abutment erosion/seepage that required large community sandbagging efforts and later repair. Canal-bank erosion and reduced late-wet-season rainfall remain concerns; farmers reported limited knowledge of formal O&M and no EPP, relying on informal monitoring and village warnings.
15	1 Apr 2025	Nam Suang	Farmer Focus Group Discussion	Nady Village (Midstream)	Farmers using reservoir water	Lao Loum	10	3	13	Assess impacts of floods, spillway erosion, emergency preparedness, irrigation management, environmental impacts, gender roles, and farmers' recommendations for improving dam safety.	Participants reported severe 1995/2018 flooding, major rice/fish losses and household evacuations, plus the 2014 spillway erosion incident. They highlighted canal/soil erosion, sediment, invasive species and flood-related health/water-quality problems. Village warnings and evacuation arrangements helped, but there is still no formal EPP and women have weaker access to decision-making/information.
16	13 May 2025	Nam Hin	Farmer Focus Group Discussion	Houay Oun Village (Upstream)	Farmers using reservoir water	Khmu	4	3	7	Review flood and drought history, irrigation water sharing, Water User Group performance, dam operation, emergency preparedness, and measures to improve water distribution and dam safety.	Farmers reported repeated flash floods damaging greenhouses and blocking canals, while broken gates, unauthorized pipe connections/leakage and high demand cause recurring upstream-downstream water conflicts. The WUG mediates day/night sharing; priorities are canal/gate repair, sediment removal and network extension. Weather warnings are used, but no formal EPP exists.
17	13 May 2025	Nam Hin	Farmer Focus Group Discussion	Thasaleung Village	Farmers and fishing households	Khmu, Hmong	4	2	6	Review resettlement experience, historical floods and droughts, reservoir-related livelihoods (especially fishing), dam operation, emergency preparedness, and community perspectives on dam safety and future improvements.	Residents emphasized that Thasaleung depends on the reservoir mainly for fishing, not irrigation. They raised unresolved concerns about the 2000 resettlement and adequacy of compensation, loss of farmland and the submerged graveyard, while noting a livelihood shift toward fishing/corn; land for paddy remains limited. No EPP has been prepared.
C	Third round of consultation aims to understand social and environment risks from project construction activities and operations as perceived by farmers and governments										
18	9 Dec 2025	Nam Houm	Focus Group Discussion – Male	Na Nard Village	Male farmers dependent on irrigation	Yao	10	0	10	Understand potential impacts of dam rehabilitation on irrigation-dependent livelihoods, identify livelihood risks, coping strategies, and support needs.	Yao men stressed that fish ponds and chicken farms depend critically on reliable Nam Houm water; any rehabilitation-related restriction could immediately affect production, income and food security. They reported virtually no viable alternative livelihood because of limited skills, land and capital, indicating a need to maintain water supply and provide targeted livelihood support.
19	9 Dec 2025	Nam Houm	Focus Group Discussion – Male	Phonxay Village	Male farmers dependent on irrigation	Hmong	6	0	6	Assess impacts of reduced irrigation water on agriculture and household livelihoods, identify alternative livelihood options and project support needs.	Hmong men said reduced irrigation would directly affect rice/vegetable production and household food/income. Short-term coping options include wage labor or cassava, but earnings would be lower or irregular. They requested livestock support (pigs/chickens, inputs and technical guidance) and noted potential impacts on health, schooling, debt repayment and cultural practices.

No	Date	Reservoir	Consultation Type	Location / Village	Stakeholder Group	Ethnic Group	Male	Female	Total	Key Purpose of Consultation Meeting	Key Feedback / Main Issues Raised
20	9 Dec 2025	Nam Houm	Focus Group Discussion – Female	Phonxay Village	Female farmers dependent on irrigation	Hmong	0	6	6	Understand women's perspectives on irrigation water security, livelihood vulnerability, household impacts, and communication needs during dam rehabilitation.	Women prioritized reliable paddy water and advance, understandable information on drawdown/water-release schedules; limited Lao language means communication should be accessible in Hmong. Livelihoods include rubber, cassava, paddy, sewing and small livestock, but alternatives would not fully replace losses; women highlighted risks to food security, school/health costs and household debt.
21	9 Dec 2025	Nam Suang	Focus Group Discussion – Female	Na Nard Village	Female farmers dependent on irrigation	Yao	0	3	3	Assess potential impacts of reduced water availability on fish ponds, paddy fields and household livelihoods, and identify women's priorities for project support.	Women did not expect direct upstream access impacts but were concerned that reduced or unstable water would affect fish ponds, paddy and poultry-related household income. They said alternative jobs are limited and emphasized maintaining predictable, affordable water supply and livelihood support during rehabilitation.
22	10 Dec 2025	Nam Suang	Focus Group Discussion – Female	Phoxay Village	Female farmers dependent on irrigation	Yao	0	3	3	Understand women's concerns regarding water availability, food security, household livelihoods and preferred mitigation measures during dam rehabilitation.	Women regarded water restriction as the main project risk because downstream livelihoods depend on paddy, rubber activities, livestock, household water and fish ponds/food. They support dam rehabilitation but asked for water access to be maintained as far as possible and for clear advance notice; alternative livelihoods were viewed as limited and unlikely to replace normal income.
23	10 Dec 2025	Nam Suang	Focus Group Discussion – Male	Phoxay Village	Male farmers	Hmong	4	0	4	Confirm dependence on reservoir water, assess potential livelihood impacts, and identify coping capacity and project support requirements.	Male Hmong participants said their principal livelihood is rainfed rubber and is largely independent of reservoir/canal water; they therefore expect little direct livelihood impact from rehabilitation. They plan to continue rubber production and would rely on rubber income/savings if unexpected disruption occurs.
24	12 Dec 2025	Nam Hin	Focus Group Discussion – Female	Thasaleung Village, Muang Xay	Female fishing households	Khmu	0	11	11	Understand potential impacts of dam rehabilitation on reservoir fishing, food security and livelihoods, and identify culturally appropriate livelihood support measures.	Women identified temporary loss of fishing access as the main risk, especially during the June/July-Nov/Dec peak, with direct effects on food and cash income. Alternatives (corn, livestock, greenhouse/trading or training) are constrained by land/capital and unlikely to replace fishing; they requested advance communication, safety/warning measures and culturally appropriate livelihood assistance.
25	12 Dec 2025	Nam Hin	Focus Group Discussion – Male	Thasaleung Village, Muang Xay	Male fishing households	Khmu	26	0	26	Assess dependence on reservoir fisheries, likely impacts of temporary fishing restrictions, alternative livelihoods, and project support needs during dam rehabilitation.	Men said reservoir fishing is central to daily food and cash income, with corn and cattle as secondary activities. Drawdown/access restrictions during peak fishing months would cause major losses; land and water constraints make diversification difficult, and corn/wage labor would not replace fishing income. They requested strong warning/safety arrangements and livelihood support.
26	12 Dec 2025	Nam Hin	Key Informant Interview	Nam Kor Hydropower Plant, Longyang Village, Muang Xay	Hydropower plant operator	N/A	4	0	4	Obtain technical information on dam operation, downstream water management, potential impacts of rehabilitation on hydropower operations, and coordination measures.	The Nam Kor operator expects no major long-term generation impact, but temporary effects could arise from drawdown, release timing and sediment/turbidity. They requested formal coordination and advance schedule/design information, minimum downstream releases and flow/turbidity monitoring, plus strong erosion, spill and waste controls. Existing emergency-warning systems and drills are limited or absent.
						TOTAL	**154**	**60**	**214**		

7.2 Information Disclosure

100. Information disclosure is an essential element of stakeholder engagement and will be undertaken throughout the Project lifecycle in accordance with ESS10 and the Stakeholder Engagement Plan (SEP). The objective is to ensure that stakeholders have timely access to relevant, accurate, understandable, and accessible information regarding the Project, enabling them to participate meaningfully in Project planning and implementation.

101. Project information shall be disclosed in both Lao and English, as appropriate. For ethnic groups and vulnerable communities, information shall be provided in culturally appropriate forms and, where necessary, explained verbally in local languages to ensure effective understanding. The following principles shall guide information disclosure:

- Project information, including the Project objectives, proposed activities, potential environmental and social risks and impacts, mitigation measures, stakeholder engagement arrangements, and grievance redress mechanisms, shall be disclosed as early as practicable during Project preparation and updated throughout implementation.
- Information shall be disclosed sufficiently in advance of consultations to allow stakeholders adequate time to understand the Project and provide informed feedback.
- Information shall be presented in clear, concise, and non-technical language appropriate to the target audience.
- Where ethnic groups are present, information shall be disclosed using culturally appropriate communication methods, including verbal translation into local languages where necessary.
- Information shall be disclosed in different formats, including Project Information Booklets, executive summaries, brochures, notices, presentations, and full environmental and social documents, as appropriate.
- Information shall be disseminated through multiple communication channels, including community meetings, village notice boards, local government offices, the MAE website, social media (where appropriate), radio announcements, and other locally accessible media.

102. Prior to Project appraisal, the Project-level ESF instruments, including the ESMF, ESCP, SEP, LMP, RPF, and EGEF, shall be disclosed in English and Lao in accordance with the World Bank ESF and applicable national requirements. Site-specific instruments, including ESIAs, ESMPs, RPs, EGEPs, CSQAPs, IPs, O&MPs, EPPs, and other relevant instruments, shall be disclosed prior to commencement of the respective subproject activities. Site-specific instruments shall be disclosed in two steps. First, the draft instrument shall be disclosed, in English and Lao and in a form accessible to affected communities, before and during consultation, in sufficient time for meaningful consultation. Second, the final instrument, incorporating the outcome of consultation and any World Bank or MAE comments, shall be disclosed again before the milestone set in the ESCP for that instrument (for the SS-ESIA and SS-ESMP, before the civil works procurement documents are issued). Records of consultation shall be annexed to each instrument. Updated documents shall be re-disclosed whenever significant revisions are made.

103. The PMU, with support from the CMU, PIUs, FS & DED Consultant, E&S Consultant (Firm), ISWS, and other relevant agencies, shall be responsible for information disclosure, consultation, documentation of stakeholder feedback, and re-disclosure of updated environmental and social instruments. Detailed stakeholder engagement and disclosure arrangements are provided in the SEP.

7.3 Grievance Redress Mechanism (GRM)

7.3.1 World Bank ESF Requirements

104. In accordance with ESS10, the WISER Project shall establish, maintain, and operate an effective, accessible, inclusive, and transparent Grievance Redress Mechanism (GRM) to receive, assess, and resolve concerns and grievances related to the environmental and social performance of the Project. The GRM will operate throughout the Project lifecycle and will be proportionate to the nature, scale, and risks of Project activities.

105. The Project GRM will complement existing government grievance mechanisms and shall not prevent project-affected persons or workers from seeking judicial or administrative remedies under the laws of Lao PDR. The Project GRM shall:

- Be accessible, free of charge, transparent, culturally appropriate, and responsive to all project stakeholders.
- Be available to women, ethnic groups, vulnerable households, persons with disabilities, downstream communities, Water User Groups (WUGs), workers, contractors, and other interested parties.
- Accept grievances submitted verbally, in writing, electronically, or anonymously.
- Ensure timely registration, assessment, investigation, resolution, and communication of grievance outcomes.
- Maintain confidentiality where requested and prohibit retaliation against complainants.
- Include survivor-centred procedures and referral pathways for SEA/SH-related grievances.
- Maintain grievance records and regularly monitor grievance trends to improve Project performance.
- Disclose information on the GRM during stakeholder consultations and throughout Project implementation.

7.3.2 National Requirements

106. The Project GRM has been developed in accordance with the relevant laws and regulations of Lao PDR, including:

- Law on Handling of Petitions (No. 07/NA, 2005; amended No. 05/NA, 2016);
- Law on Grievance Redress (No. 106/NA, 2022);
- Environmental Protection Law (No. 53/NA, 2024);
- Labor Law (No. 43/NA, 2018);
- Law on Preventing and Combating Violence Against Women and Children (No. 56/NA, 2014);
- Decree on Ethnic Groups Affairs (No. 207/GOL, 2020); and
- Other applicable laws and regulations.

7.3.3 Principles of the Project GRM

107. The Project GRM will be implemented based on the following principles:

- **Accessibility:** Multiple channels shall be available, including village authorities, GRM Committees, PIUs, PMU, telephone, email, written submissions, community meetings, and other appropriate communication channels.
- **Inclusiveness:** The GRM shall be accessible to all stakeholders, including women, ethnic groups, vulnerable households, persons with disabilities, WUGs, downstream communities, and workers.

- **Transparency:** Clear procedures, responsibilities, and timeframes shall be disclosed to stakeholders.
- **Confidentiality:** Confidentiality shall be maintained where requested, particularly for sensitive grievances and SEA/SH cases.
- **Timeliness:** Grievances shall be acknowledged, investigated, and resolved within agreed timeframes.
- **Fairness:** Grievances shall be addressed objectively, impartially, and without discrimination or retaliation.
- **No Cost:** Complainants shall not incur any cost for accessing or using the Project GRM.
- **Documentation:** All grievances and their resolution shall be recorded, monitored, and reported.
- **Appeal:** Complainants who are not satisfied with the proposed resolution may elevate their grievance through higher administrative levels or seek judicial remedies in accordance with national legislation.

7.3.4 Project GRM and Grievance Resolution Process

108. The Project will establish and maintain four complementary grievance mechanisms to address different types of grievances as presented in **Table 7-2**. Detailed procedures, institutional arrangements, grievance handling processes, and reporting requirements are provided in the SEP, RPF and LMP.

Table 7-2: Project GRM and Grievance Resolution Process

GRM Type	Types of Grievances	Resolution Process
General Project GRM	Environmental and social issues, pollution, dust, noise, traffic safety, community health and safety, dam safety, construction impacts, stakeholder engagement, access, and other Project-related concerns.	**Step 1:** Submit grievance to Village Authority/GRM Committee, Contractor, ISWS, PIU or PMU. **Step 2:** PIU investigates and coordinates resolution with Contractor, ISWS and relevant agencies. **Step 3:** Unresolved cases are referred to the PMU for review and decision. **Step 4:** If still unresolved, the complainant may seek resolution through the competent government authority or the Court in accordance with Lao PDR laws.
Resettlement GRM	Land acquisition, compensation, livelihood restoration, asset valuation, eligibility, access restrictions, and resettlement-related issues.	**Step 1:** Submit grievance to Village Resettlement Committee (VRC)/Village Authority. **Step 2:** Escalate to District Resettlement Committee (DRC), if unresolved. **Step 3:** Escalate to Provincial Resettlement Committee (PRC) and PMU. **Step 4:** If unresolved, the complainant may seek administrative or judicial remedies.
Worker GRM	Employment conditions, wages, working hours, OHS, discrimination, worker accommodation, Code of Conduct, and other labor-related matters.	**Step 1:** Worker submits grievance to immediate supervisor or Contractor. **Step 2:** If unresolved, refer to the Contractor's GRM Committee and ISWS. **Step 3:** Escalate to the PIU and PMU. **Step 4:** Workers may access the national labor dispute resolution process or the Court if necessary.
SEA/SH GRM	Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), Gender-Based Violence (GBV),	**Step 1:** Complaint may be submitted confidentially through designated SEA/SH focal points, PIU, PMU, ISWS, Contractor, Lao Women's Union, or service

GRM Type	Types of Grievances	Resolution Process
	Violence Against Children (VAC), and other sensitive complaints.	providers. AP can submit a complaint to, or seek counselling support from local Lao Women's Union, as they wish, or refer to the national network/ center for women protection and counselling services using hotline number at 1362 and/or seek health care services at Mahosoth hospital (hotline number: 1527) **Step 2:** Immediate referral to appropriate survivor support services in accordance with survivor-centred principles. **Step 3:** Only the survivor decides whether the case proceeds through the Project GRM or legal system. **Step 4:** The Project records only non-identifiable information and monitors case closure while maintaining confidentiality.

8. MONITORING AND REPORTING

109. Monitoring is undertaken to verify that the mitigation measures and commitments contained in the ESMF, ESCP, and other environmental and social instruments are effectively implemented and achieve their intended outcomes. Monitoring also enables early identification of non-compliance, facilitates corrective actions, and supports adaptive management throughout the Project lifecycle.

110. The objectives of environmental and social monitoring are to:

- Ensure compliance with the ESCP, ESMF, applicable ESSs, national legislation, and approved environmental and social instruments.
- Verify implementation and effectiveness of mitigation measures.
- Identify non-compliance and implement timely corrective actions.
- Strengthen environmental and social management practices through adaptive management.
- Provide evidence-based information for decision-making and continual improvement.
- Fulfil the environmental and social reporting requirements of the Government and the World Bank.

111. The Project will establish an integrated monitoring and reporting system comprising daily, monthly, quarterly, and bi-annual monitoring, together with incident reporting and adaptive management.

8.1 Internal Monitoring

112. Internal monitoring shall be undertaken throughout the Project lifecycle to verify compliance with the ESCP, ESMF, applicable ESSs, national requirements, and approved site-specific E&S instruments. Monitoring will cover implementation of mitigation measures, environmental and social performance, dam safety, labor and working conditions, community health and safety, stakeholder engagement, grievance management, and corrective actions. Monitoring responsibilities of the PMU, E&S Consultant (Firm), FS & DED Consultant, ISWS, Contractors, PoE, ESMC, PRC/DRC, GRCs, WUGs, and affected communities are summarized in **Table 8-1**, while the proposed monitoring parameters, methods, schedules, and responsible agencies are presented in **Table 8-2**.

Table 8-1: Environmental and Social Monitoring Responsibilities

Responsible Agency	Plans / Instruments to be Monitored	Monitoring Responsibilities

PMU (with support from the E&S Consultant (Firm))	ESCP, ESMF/ ESIAs/ ESMPs, C-ESMPs, RPF/ RPs, EGEF/EGEPs, SEP, LMP, CSQAPs, IPs, O&MPs, EPPs, WAPs, and all other Project E&S instruments	• Coordinate overall implementation of the ESCP, ESMF, and all Project E&S instruments. • Conduct periodic E&S monitoring, compliance audits, and implementation reviews. • Review the quality of E&S implementation by the PIUs, ISWS, Contractors, and other implementing agencies. • Review E&S deliverables, engineering designs, BDs, and CDs prepared by the FS & DED Consultant. • Supervise the environmental and social performance of the ISWS. • Consolidate monitoring information received from the PIUs, ISWS, Contractors, and other consultants. • Prepare and submit Bi-Annual E&S Monitoring Reports to the World Bank. • Monitor implementation of corrective actions and ESCP commitments. • Coordinate incident and accident reporting in accordance with ESIRT. • Provide technical advice, capacity building, and recommendations for corrective actions.
FS & DED Consultant	ESIAs, ESMPs, RPF, RPs, EGEPs, CSQAPs, IPs, O&MPs, EPPs, WAPs, engineering designs and technical specifications	• Monitor implementation of E&S recommendations during the design stage. • Ensure E&S mitigation measures are incorporated into engineering designs, technical specifications, BDs and CDs. • Provide technical clarification on approved E&S instruments. • Support the PMU in reviewing design modifications that may affect E&S risks and impacts.
ISWS	C-ESMPs and all Contractor management plans (TMP, OHS Plan, WMP, Spoil Disposal Plan, Borrow Area and Quarry Management Plan, Worker Camp Management Plan, Erosion and Sediment Control Plan, Pollution Prevention Plan, Hazardous Materials Management Plan, CHS Plan, Instrumentation Plan, Emergency Response Procedures, Stakeholder Engagement and GRM Procedures, and other approved Contractor plans)	• Conduct routine supervision of Contractor compliance with approved C-ESMPs and contractual ESHS requirements. • Undertake regular site inspections and verify implementation of mitigation measures. • Review Contractors' monthly ESHS reports. • Issue and follow up corrective action requests. • Submit monthly and quarterly E&S supervision reports to the PMU and PIUs.
Contractors	Approved C-ESMPs and all associated Contractor management plans	• Conduct daily site inspections and ESHS monitoring. • Implement approved C-ESMPs and all associated management plans. • Maintain monitoring records and ESHS registers.

		• Submit monthly ESHS reports to the ISWS and PIU. • Immediately report incidents and accidents to the ISWS, PIU, and PMU.
Panel of Experts (PoE)	CSQAPs, IPs, O&MPs, EPPs, DBA, dam safety aspects of engineering designs	• Periodically review dam safety performance during design, construction, commissioning, and initial operation. • Review implementation of CSQAPs, IPs, O&MPs, EPPs, DBA recommendations, and instrumentation and monitoring programmes. • Provide independent technical advice and recommendations to the PMU on dam safety and risk management.
Environmental and Social Monitoring Committee (ESMC)	ESCP, ESMPs, C-ESMPs, ECC conditions, monitoring reports, corrective action plans	• Monitor overall environmental and social performance and compliance with the ESCP, ESMF, ECC conditions, and approved E&S instruments. • Participate in periodic site inspections. • Review monitoring reports and recommend corrective actions. • Support coordination among implementing agencies on E&S matters.
Provincial and District Resettlement Committees (PRC/DRC)	RPF, RPs, livelihood restoration measures, compensation implementation	• Monitor implementation of land acquisition, compensation, livelihood restoration, and resettlement activities. • Verify eligibility, compensation payments, and completion of resettlement activities before commencement of civil works. • Monitor resolution of resettlement-related grievances.
Grievance Redress Committees (GRCs)	Project GRM, Worker GRM, Resettlement GRM, SEA/SH GRM	• Receive, register, review, and resolve grievances in accordance with the Project GRM procedures. • Monitor grievance resolution timelines and outcomes. • Maintain grievance records and regularly report grievance statistics and trends to the PMU.
Water User Groups (WUGs)	O&MPs, WAPs, EPPs, irrigation operation and maintenance activities	• Participate in monitoring operation and maintenance of irrigation infrastructure. • Monitor water allocation, irrigation service delivery, and operation of rehabilitated facilities. • Report operational issues, dam safety concerns, and community grievances to the PIU and relevant authorities.
Communities, Ethnic Groups, Women, and Other Project Stakeholders	ESMPs, SEP, EGEPs, CHS measures, Project GRM	• Participate in stakeholder consultations, monitoring activities, and community feedback processes. • Monitor implementation of mitigation measures affecting local communities. • Report environmental, social, dam safety, labor, and community concerns through the Project GRM. • Participate in emergency preparedness activities, awareness programmes, and monitoring of community health and safety measures.

Table 8-2: Proposed Environmental and Social Monitoring Measures

Parameter	Location	Means of Monitoring	Schedule	Responsible Agencies
Completion and approval of E&S instruments (ESIA, ESMP, C-ESMP, RPF, RP, EGEP, SEP, CSQAPs, IPs,	All subprojects	Document review	Prior to procurement and commencement of civil works	PMU, E&S Consultant (Firm), FS & DED Consultant

Parameter	Location	Means of Monitoring	Schedule	Responsible Agencies
O&MP, EPP, and other required plans)				
Integration of E&S requirements into engineering designs, BDs and CDs	All subprojects	Design review and document verification	During FS & DED	PMU, E&S Consultant (Firm), FS & DED Consultant
Implementation of mitigation measures in approved ESMPs, C-ESMPs, CSQAPs, IPs, O&MPs, EPPs and other management plans	Construction sites, dam sites, reservoirs, canals, borrow areas, spoil disposal sites, worker camps and associated facilities	Site inspections, monitoring checklists, consultations, compliance audits	Daily, Monthly, Quarterly and Bi-Annual	Contractors, ISWS, PIUs, PMU, E&S Consultant (Firm)
Implementation of stakeholder engagement activities (SEP and EGEP)	All Project areas	Consultation records, attendance lists, disclosure records and field verification	Monthly and Quarterly	PIUs, ISWS, PMU, E&S Consultant (Firm)
Land acquisition, compensation and livelihood restoration (where applicable)	Affected areas	Field verification, compensation records, interviews and consultations	Quarterly	PRC/DRC, PIU, PMU, E&S Consultant (Firm)
Dam safety monitoring, instrumentation, reservoir operation, O&MPs, EPPs and implementation of DBA recommendations	Rehabilitation dams and reservoirs	Dam inspections, instrumentation records, technical review and field verification	Monthly, Quarterly and during major construction milestones	PoE, ISWS, PIU, PMU
Water allocation, environmental flows and irrigation system operation	Reservoirs, command areas and irrigation systems	Field inspections, operational records, water monitoring data and WUG feedback	Quarterly and during operation	PIU, WUGs, PMU
Occupational Health and Safety (OHS) and Community Health and Safety (CHS)	Construction sites, worker camps and surrounding communities	Site inspections, incident records, toolbox meetings and interviews	Daily and Monthly	Contractors, ISWS, PIU
Pollution prevention, waste management, erosion and sediment control	Construction sites, borrow areas, spoil disposal sites and water bodies	Site inspections, environmental monitoring and compliance review	Daily and Monthly	Contractors, ISWS, PIU
Biodiversity conservation and cultural heritage protection (including CFP implementation)	Environmentally and culturally sensitive areas	Site inspections, field verification and consultation with relevant authorities	Monthly and as required	Contractors, ISWS, PIU, PMU
Functioning of the Project GRMs (General,	All Project areas	GRM registers, case tracking and	Continuous; summarized	GRCs, PIUs, PMU, E&S Consultant (Firm)

Parameter	Location	Means of Monitoring	Schedule	Responsible Agencies
Resettlement, Worker and SEA/SH)		beneficiary feedback	Monthly and Bi-Annually	
Environmental and social incidents and accidents (ESIRT)	All Project activities	Incident reports, investigations and corrective action tracking	As incidents occur	Contractors, ISWS, PIU, PMU
Overall ESCP compliance and implementation of corrective actions	Project-wide	Review of monitoring reports, site inspections and compliance audits	Bi-Annual	PMU, E&S Consultant (Firm), World Bank

8.2 Environmental and Social Monitoring Reports

113. The PMU shall prepare and submit Bi-Annual E&S Monitoring Reports to the World Bank in accordance with the ESCP. The reports shall include, as appropriate:

- Status of implementation of the Environmental and Social Commitment Plan (ESCP).
- Status of preparation, disclosure, consultation, and implementation of E&S instruments required under the ESCP, including the ESIA, ESMF, ESMPs, C-ESMPs, SEP, LMP, RPF, RPs, EGEF, EGEPs, BMPs, CSQAPs, IPs, O&MPs, EPPs, and other site-specific instruments, as applicable.
- Summary of stakeholder engagement, consultation, information disclosure, and community awareness activities undertaken in accordance with the SEP.
- Status of land acquisition, livelihood restoration, ethnic group engagement, and implementation of associated E&S instruments.
- ESHS performance of Contractors, Subcontractors, and ISWS, including implementation of C-ESMPs, compliance with contractual ESHS requirements, and status of corrective actions.
- Status of dam safety, including implementation of CSQAPs, IPs, O&MPs, EPPs, DBA recommendations, instrumentation and monitoring, reservoir operation, environmental flow management, and emergency preparedness, as applicable.
- Status of biodiversity conservation, pollution prevention, waste management, OHS, CHS, and implementation of other site-specific management plans.
- Summary of grievances received through the Project GRM, Worker GRM, Resettlement GRM, and SEA/SH GRM, including the status of resolution and outstanding cases.
- Number, nature, and status of incidents and accidents reported, including implementation of corrective and preventive actions.
- Status of implementation of corrective actions arising from supervision missions, monitoring activities, audits, inspections, and incident investigations.
- Summary of environmental and social monitoring results, including compliance with applicable ESSs, national regulatory requirements, ECC conditions, and approved E&S instruments.
- Progress on implementation of capacity-building and training activities.
- Key environmental and social issues, lessons learned, good practices, and proposed actions for the next reporting period.

114. ISWS Quarterly Environmental and Social Monitoring Report (Q-ESMR). The ISWS shall review the Contractors' Monthly ESHS Progress Reports, conduct regular site inspections and compliance monitoring, and prepare a Q-ESMR for submission to the PMU and PIUs. The Quarterly ESMR shall include:

- Summary of Contractors' ESHS performance.
- Compliance with the ESCP, ESMPs, C-ESMPs, and contractual ESHS requirements.

- Implementation status of mitigation measures and management plans.
- Progress on implementation of CSQAPs, IPs, O&MPs, EPPs, and other dam safety measures, where applicable.
- Results of environmental and social monitoring and site inspections.
- Status of stakeholder engagement and grievance management.
- Status of land acquisition and livelihood restoration, where applicable.
- Incidents, accidents, non-compliances, and implementation of corrective actions.
- Capacity-building and training activities.
- Key issues, lessons learned, and recommendations for corrective actions.

115. Contractor's Monthly ESHS Progress Report. Each Contractor shall prepare and submit a Monthly Environmental, Social, Health and Safety (ESHS) Progress Report to the ISWS and PIU throughout the construction period. The report shall summarize implementation of the approved C-ESMP and other Contractor management plans, including:

- Status of implementation of the C-ESMP and associated management plans.
- Results of routine environmental and social monitoring.
- Occupational Health and Safety (OHS) and Community Health and Safety (CHS) performance.
- Dam safety-related construction activities, where applicable.
- Waste management, pollution prevention, erosion and sediment control.
- Stakeholder engagement and community consultations.
- Grievances received and resolved.
- Incidents, accidents, near misses, and implementation of corrective actions.
- Environmental and social training conducted.
- Non-compliances, corrective actions, and outstanding issues.
- Planned ESHS activities for the following month.

8.3 Incident and Accident Reporting

116. In the event of any significant incident or accident related to the WISER Project that has, or is likely to have, a significant adverse effect on the environment, affected communities, the public, or workers—including, but not limited to, death or serious injury to workers or the public; dam safety incidents or emergencies; acts of violence, discrimination, or protest; allegations of SEA/SH; forced or child labor; major environmental pollution; displacement without due process; disease outbreaks; or unforeseen impacts on biodiversity or cultural heritage—the Contractor shall immediately notify the ISWS, PIU, and PMU upon becoming aware of the incident or accident. The PMU, with support from the E&S Consultant (Firm), ISWS, and relevant specialists, shall notify the World Bank within **48 hours** after becoming aware of the incident or accident and provide all available information and details regarding the incident or accident, upon request by the Association.

117. Following the initial notification, the PMU, with support from the E&S Consultant (Firm), ISWS, and relevant specialists, shall undertake an appropriate investigation to establish the immediate, underlying, and root causes of the incident or accident. Based on the findings, the PMU shall prepare a Review Report and Corrective Action Plan (CAP), setting out the measures required to address the incident, prevent recurrence, assign responsibilities, and establish implementation timeframes. Reportable incidents include, but are not limited to:

- Fatalities or serious injuries to workers or the public.
- Dam safety incidents or emergency situations.
- Major environmental pollution or hazardous material spills.

- Significant community health and safety incidents.
- Acts of violence, discrimination, or public protests related to the Project.
- Forced labor, child labor, or displacement without due process.
- Allegations of Sexual Exploitation and Abuse (SEA) or Sexual Harassment (SH).
- Disease outbreaks associated with Project activities.
- Unforeseen impacts on biodiversity, natural habitats, or cultural heritage.
- Any other incident with actual or potential significant environmental or social consequences.

118. Any incident or accident related to the Project that has, or is likely to have, a significant adverse effect on the environment, affected communities, the public, or workers shall be managed in accordance with the ESCP and the World Bank Environmental and Social Incident Response Toolkit (ESIRT). Incident reporting, analysis, and management shall follow the World Bank's ESIRT, which provides guidance on classification, timelines, and reporting protocols for E&S incidents that occur in the project area or are associated with the project (see also **Annex 9: List of Reportable Incidents).**

8.4 External Monitoring

119. External monitoring and evaluation of the Project's environmental and social performance shall be carried out through an Independent Mid-Term Review and an Independent Project Completion Review (Post-Implementation Review). The independent reviewer(s) shall assess the effectiveness of implementation of the ESCP, ESMF, applicable ESSs, national regulatory requirements, and approved site-specific E&S instruments, and evaluate the overall environmental and social performance of the Project. The external review shall assess, among others, whether:

- the ESCP and ESMF have been effectively implemented throughout the Project lifecycle;
- approved E&S instruments and mitigation measures have been implemented in accordance with the applicable ESSs and national requirements;
- Contractors, ISWS, and implementing agencies have complied with their contractual ESHS obligations;
- dam safety requirements, including implementation of CSQAPs, IPs, O&MPs, EPPs, and DBA recommendations, have been effectively implemented, where applicable;
- stakeholder engagement, grievance management, and participation of Water User Groups (WUGs), affected communities, ethnic groups, and women have been effective;
- corrective actions arising from monitoring, supervision, audits, inspections, and incident investigations have been implemented; and
- the Project has achieved its intended environmental and social outcomes and lessons learned have been identified for future projects.

120. The findings and recommendations of the Mid-Term Review and Project Completion Review shall be documented in independent review reports and used to strengthen Project implementation, improve environmental and social performance, and support adaptive management during the remaining implementation period and future operations.

9. COSTS AND BUDGET

121. The costs for implementation of the ESMF will be incorporated into the overall Project budget and the relevant consulting service and civil works contracts. As summarized in **Table 9-1**, the budget covers implementation of the ESCP and ESMF, preparation and implementation of site-specific E&S instruments, capacity building, stakeholder engagement, grievance management, environmental and social monitoring,

independent dam safety review, and implementation of site-specific mitigation measures throughout the Project implementation period of six years.

122. The estimated ESMF implementation cost is **USD 1,242,800**, comprising USD 597,200 under the PMU budget (Component 3) and USD 645,600 under Component 1. This total excludes the implementation of Resettlement Plans - including the detailed measurement survey, updating of compensation rates and payment of compensation - which is still being estimated and are shown as placeholders in Table 9-1.

123. Under the PMU budget, provisions are made for capacity building and training on the ESF and Project E&S instruments; implementation of the SEP and Project GRMs; environmental and social monitoring, reporting, and incident management; and engagement of the E&S Consultant (Firm) to provide technical assistance to the PMU for implementation of the ESCP and ESMF, review of E&S deliverables, supervision of the ISWS, monitoring, reporting, and institutional capacity building.

124. Under Component 1, the budget includes preparation of site-specific E&S instruments, including ESIAs, ESMPs, RPF, RPs, EGEPs, CSQAPs, IPs, O&MPs, EPPs, and other required studies and plans by the FS & DED Consultant. The budget also includes dam safety studies and engineering assessments, stakeholder engagement and disclosure activities, implementation of the RPF, RPs, EGEPs, SEP and Project GRMs, implementation of CSQAPs, IPs, O&MPs and EPPs, environmental and social supervision by the ISWS, independent dam safety review by the Panel of Experts (PoE), and travel and accommodation for environmental and social monitoring missions.

125. Costs associated with UXO surveys, risk assessments, clearance, permitting, and certification, where required, shall be included in the civil works contracts as a provisional sum. Likewise, implementation of the C-ESMPs and other Contractor management plans, including OHS, CHS, pollution prevention, waste management, traffic management, emergency preparedness, biodiversity protection, and other contractual ESHS obligations, shall be included in the Contractors' bids and civil works contracts.

126. The budget estimates in **Table 9-1** are indicative. They are based on a six-year implementation period, two subproject sites (Vientiane Capital and Province combined plus Oudomxay) and unit rates drawn from comparable World Bank-financed operations in Lao PDR. They will be reviewed and finalized once the remaining items are costed, and updated during Project implementation as necessary.

127. The indicative budget for implementation of the ESMF is presented and will be finalized and updated during Project implementation, as necessary.

Table 9-1: Estimated Budget for ESMF Implementation

Activity/Cost Item Description	Funding Source	Estimated Budget (USD)	Basis for estimate and comments
I. ESMF Budget under PMU (Comp. 3)		**597,200**	
1. Capacity building and training: Training on ESF, ESCP, ESMF, ESSs, dam safety, stakeholder engagement, GRM, ESIRT, OHS, CHS, SEP, RPF, EGEF, and other E&S plans for PMU, CMU, PIU, ESMC, PRC/DRC, GRCs, WUGs, ISWS and Contractors	PMU Budget	**22,000**	USD 10,000 for ESF-specific training at PMU level, plus 3 rounds x 2 subprojects x 2,000 = 12,000.
2. SEP and GRM implementation: Communication materials, consultations, information disclosure, community engagement,	PMU Budget	**30,000**	

Activity/Cost Item Description	Funding Source	Estimated Budget (USD)	Basis for estimate and comments
grievance handling, awareness programmes			
3. E&S monitoring and reporting: Bi-Annual E&S monitoring, compliance audits, supervision, incident reporting, and capacity building by the E&S Consultant (Firm)	PMU Budget	**30,000**	
4. E&S Consultant (Firm): Technical assistance for ESMF and ESCP implementation, supervision, monitoring, reporting, review of E&S deliverables, engineering designs, BDs/CDs, supervision of ISWS, and capacity building	PMU Consulting Services	**517,200**	Sample team composition: (a) Part-time senior specialist: 60 days per year x 6 = 360 days at about USD 417 per day = 150,000. (b) Full-time E&S consultant: USD 54,000 per year x 6 = 324,000. (c) Two junior specialists: USD 7,200 per year x 6 = 43,200.
II. ESMF Budget under Comp. 1		**645,600 (plus TBD items)**	
1. Preparation of Site-Specific E&S Instruments: Preparation of ESIAs, ESMPs, RPs, EGEPs, and other required E&S instruments	DED Consultant Budget	**Included in DED contract**	
2. Dam Safety Plans and Engineering Assessments: CSQAPs, IPS, O&MPs, EPPs Dam safety assessments, DBA, inundation mapping, instrumentation design, and related studies	DED Consultant Budget	**Included in DED contract**	
3. Translation, printing and communication materials: Disclosure of E&S instruments and stakeholder consultation materials	PMU Budget	**12,000**	USD 6,000 per subproject. For 2 subprojects = 12,000.
4. UXO surveys, assessments and clearance: UXO survey, risk assessment, clearance, permits, and certification prior to commencement of civil works, where required	Contractor Cost (Provisional Sum)	**Included in civil works contracts**	
5. Implementation of site-specific ESMPs, C-ESMPs and ESCOP: Included in Contractors' contractual obligations	Contractors' costs and ISWS supervision costs	**Included in civil works contract**	
6. Implementation of RPF, RPs, EGEPs, SEP, GRMs and GAP: Consultation, compensation (where applicable), livelihood restoration, good agricultural practices promotion, stakeholder engagement, grievance management, and monitoring	Project Budget	**9,600 plus TBD budget for RP implementation**	(a) GRM, SEP and EGEP training and monitoring: USD 800 per subproject per year, so 800 x 2 subprojects x 6 years = 9,600. (b) Resettlement plan implementation: TBD, placeholder pending the resettlement estimate.
7. ISWS: Environmental and social supervision, compliance monitoring, quarterly ESMRs, review of Contractors' reports, and corrective action follow-up	ISWS Contract	**Included in ISWS contract**	

Activity/Cost Item Description	Funding Source	Estimated Budget (USD)	Basis for estimate and comments
8. Panel of Experts (PoE): Independent review of dam safety, CSQAPs, IPs, O&MPs, EPPs, DBA, engineering designs, and implementation	Project Budget	**540,000**	3 individual consultants at an assumed USD 1,200 per day. All PoE costs including travel are accounted for here
9. Travel and accommodation for E&S monitoring: PMU, E&S Consultant (Firm), PIU, and ISWS monitoring missions	Project Budget	**84,000**	(a) PMU and consultant compliance missions: USD 1,000 per trip. WISER has 2 subprojects x 3 trips per year x 6 years = 36 trips = 36,000. (b) Provincial PIU missions: USD 4,000 per subprojects per year x 2 subprojects x 6 years = 48,000.
TOTAL ESMF IMPLEMENTATION COSTS =		**1,242,800 plus items to be determined**	597,200 (PMU) + 645,600 (Comp.1 1). About 1.8% of the US$65M IDA financing. Excludes the resettlement placeholder (II.6b).

10. ANNEXES

10.1 Annex 1 – Ineligible / Negative Criteria List

To avoid significant adverse environmental and social impacts, the following activities shall **not** be eligible for financing under the WISER Project:

- Construction of **new dams** or reservoirs, or activities involving significant expansion of existing dam footprints beyond the scope of rehabilitation.
- Activities classified as **High Risk** under the World Bank ESF.
- Activities requiring significant permanent land acquisition, physical displacement, or economic displacement where these impacts would result in a High Risk classification or cannot be managed in accordance with ESS5 and the Project's Resettlement Policy Framework.
- Activities that would cause adverse impacts on Indigenous Peoples/Ethnic Groups that cannot be avoided, minimized, or mitigated in accordance with the EGEF and ESS7.
- Activities resulting in significant conversion or degradation of natural habitats, critical habitats, protected areas, protected forests, wetlands, or other environmentally sensitive areas.
- Activities resulting in significant adverse impacts on biodiversity, threatened or endangered species, or ecosystem services.
- Activities causing adverse impacts on physical cultural resources or tangible and intangible cultural heritage that cannot be avoided or adequately mitigated, including temples, cemeteries, sacred sites, archaeological resources, and other cultural heritage resources.
- Activities involving commercial logging, forest conversion, or unsustainable harvesting of timber or non-timber forest products.
- Activities involving unsustainable abstraction or diversion of water resources that would significantly affect downstream users, environmental flows, or river basin sustainability.
- Activities that would adversely affect international waterways beyond the scope permitted under the Project and applicable World Bank requirements.
- Activities involving the procurement or use of prohibited pesticides, persistent organic pollutants (POPs), asbestos-containing materials, radioactive materials, explosives (except authorized UXO clearance), or other hazardous substances prohibited under Lao PDR legislation or international conventions.
- Activities involving the manufacture, trade, or use of illegal products or activities prohibited under Lao PDR laws, regulations, or international agreements.
- Activities involving forced labour, child labour, bonded labour, trafficked labour, or other exploitative labour practices.
- Activities presenting unacceptable occupational or community health and safety risks that cannot be adequately managed through the application of Good International Industry Practice (GIIP) and the Project's E&S instruments.
- Activities requiring involuntary resettlement or restrictions on land use that are inconsistent with the RPF and ESS5.
- Activities located in areas contaminated by unexploded ordnance (UXO) unless the appropriate UXO screening, risk assessments, clearance, and certification have been completed by the NRA.
- Activities that, based on the screening, cannot be carried out in compliance with the World Bank ESF, applicable Lao PDR law or the Project ESCP, even with the instruments set out in this ESMF.

Definitions used in this Annex:

- **Significant**: an impact that is large in scale or extent, long-term or irreversible, affects sensitive receptors (critical habitats, protected areas, ethnic groups, cultural heritage), or cannot be reduced through the mitigation hierarchy to a level the Bank's ESF and the SEP/RPF/EGEF accept; for screening, an impact rated as High risk under the ESF or beyond the limits stated in this annex:
    - **Land/Resettlement**: Activities requiring physical displacement of households, or permanent acquisition of land or assets that would affect [XX] or more households or [XX] ha, or that cannot be managed under the Resettlement Framework.
    - **Biodiversity:** Activities resulting in conversion or degradation of critical habitats, or of natural habitats that cannot be mitigated in line with ESS6, or any activity within a protected area or protected forest unless permitted by law and consistent with ESS6.
    - **Species:** Activities resulting in adverse impacts on threatened or endangered species (IUCN Critically Endangered, Endangered, or Lao protected species) that cannot be avoided or mitigated in line with ESS6.
- **Adverse:** a negative environmental or social effect on people, communities, livelihoods or ecosystems that is not temporary, minor or fully reversible, caused by Project activities directly or indirectly.

10.2 Annex 2 – Environmental and Social Screening Form

The objective of this Annex is to identify the potential environmental and social risks and impacts of each proposed subproject or activity and determine the appropriate environmental and social management instruments required in accordance with the applicable World Bank Environmental and Social Standards (ESSs), the Environmental and Social Management Framework (ESMF), and relevant laws and regulations of the Lao PDR. Based on the results of the environmental and social screening, appropriate environmental and social instruments shall be prepared and implemented by the responsible implementing agencies in proportion to the nature, scale, location, and significance of the identified environmental and social risks and impacts.

Depending on the screening results, one or more environmental and social instruments may be required. These may include, as appropriate, a **Site-Specific Environmental and Social Impact Assessment (ESIA), Site-Specific Environmental and Social Management Plan (ESMP), Contractor Environmental and Social Management Plan (C-ESMP), Construction Supervision and Quality Assurance Plan (CSQAP), Instrumentation Plan (IP), Operation and Maintenance Plan (O&MP), Emergency Preparedness Plan (EPP), Biodiversity Management Plan (BMP), Resettlement Plan (RP/S-RP), Ethnic Group Engagement Plan (EGEP), Cultural Heritage Management Measures including the Chance Find Procedure (CFP), Labour Management Procedures (LMP), Stakeholder Engagement Plan (SEP),** and other site-specific management plans and procedures identified through the environmental and social screening and assessment process, including **Traffic Management Plans (TMPs), Community Health and Safety Plans (CHSPs), Occupational Health and Safety (OHS) Plans, Waste Management Plans (WMPs), Worker Camp Management Plans, Borrow Area and Quarry Management Plans, Spoil Disposal Plans, Erosion and Sediment Control Plans, Pollution Prevention Plans, Hazardous Materials Management Plans, Emergency Response Procedures,** and **Grievance Redress Mechanism (GRM) procedures**. Contractors shall prepare and implement a **C-ESMP**, consistent with the approved ESMP, prior to commencement of civil works.

The table below summarizes the environmental and social screening requirements and identifies the environmental and social instruments that may be required based on the screening results.

The Environmental and Social Screening Form shall remain a **living document** and shall be reviewed and updated whenever there is a change in the subproject scope, design, location, implementation approach, or other circumstances that could alter the environmental and social risk profile.

1. Part A - Subproject Information

Item	Description
Subproject Title	
Subproject Location	
Responsible Implementing Agency	
Estimated Cost	
Proposed Start/Completion Date	
Brief Description of Subproject	
Proposed Activities	
Applicable Project Component	
Screening Date	
Screening Team	
Preliminary E&S Risk Classification	

2. Part B - Environmental and Social Screening Checklist

No.	Screening Question (Including Indicative Risks/Impacts)	Yes/No /NA	Required Action if "Yes"
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts			
1	Does the subproject involve rehabilitation of dams, reservoirs, spillways, outlet works, canals, irrigation systems or associated infrastructure?		Prepare a site-specific ESIA (where required), ESMP and C-ESMP proportionate to the identified risks and impacts. The ESMP/C-ESMP shall incorporate all relevant site-specific management plans identified through the screening process, including, as appropriate, the TMP, CHSP, OHS Plan, WMP, Worker Camp Management Plan, Borrow Area and Quarry Management Plan, Spoil Disposal Plan, Pollution Prevention Plan, Erosion and Sediment Control Plan, Hazardous Materials Management Plan, Instrumentation Plan, Emergency Response Procedures, and other management measures.
2	Will the activity involve feasibility studies (FS), detailed engineering design (DED), river basin planning, technical assistance, institutional strengthening or preparation of regulations that may influence future investments?		Integrate ESF requirements into the ToR and outputs and prepare additional E&S instruments, as required.
3	Could the proposed activity generate significant environmental or social risks requiring specialized management plans?		Prepare the applicable site-specific plans identified through screening (e.g., **CSQAP, IP, O&MP, EPP, BMP, RP, EGEP, TMP, CHSP**, etc.).
4	Is the implementing agency's environmental and social capacity (PMU, CMU, PIU, Water User Groups (WUGs), or other implementing agencies) insufficient to effectively implement the ESF or supervise Project activities?		Prepare and implement a Capacity Building Plan, appoint Environmental and Social Focal Points (ESFPs), establish the required E&S institutional arrangements, and strengthen monitoring, supervision, reporting, and compliance systems.
5	Will the activity/subproject support minor renovation civil work		Apply ESCOP provided in Annex 10.
ESS2 – Labour and Working Conditions			
6	Will the Project employ direct, contracted, primary supply or community workers?		Apply the **LMP**, Worker GRM and Code of Conduct.
7	Are there significant occupational health and safety risks associated with construction activities?		Prepare and implement an **OHS Plan** as part of the ESMP/C-ESMP.
8	Will worker camps be established?		Prepare **Worker Camp Management Measures** within the ESMP/C-ESMP.
9	Could labour influx increase risks of SEA/SH, communicable diseases or community conflict?		Include SEA/SH measures, CHSP, Code of Conduct and Worker GRM in the ESMP/C-ESMP.
10	Is there any risk of child labour, forced labour or discrimination?		Apply the LMP and monitor compliance throughout implementation.
ESS3 – Resource Efficiency and Pollution Prevention and Management			
11	Will the Project require reservoir drawdown, changes to reservoir operation, or controlled		Prepare and implement a **Water Allocation Plan (WAP)** and, where reservoir drawdown is required, a

No.	Screening Question (Including Indicative Risks/Impacts)	Yes/No /NA	Required Action if "Yes"
	water releases that may affect water availability, water quality, sediment transport, irrigation supply, downstream users, or environmental flows?		Reservoir Drawdown Management Plan (RDMP), including measures for water allocation, environmental flows, downstream communication, sediment management, water quality protection, and monitoring, consistent with ESS3 and the approved ESMP.
12	Will the Project generate spoil, dredged material, wastewater, sediment, dust or emissions?		Prepare **Waste Management**, **Spoil Disposal**, **Pollution Prevention**, and **Erosion and Sediment Control Plans** within the ESMP/C-ESMP.
13	Will hazardous materials, fuels, oils or chemicals be used or stored?		Prepare a **Hazardous Materials Management Plan**.
14	Will borrow pits, quarries or material sources be required?		Prepare **Borrow Area and Quarry Management Plans** and obtain all required approvals.
15	Will construction generate hazardous waste or electronic waste?		Include hazardous waste and e-waste management procedures in the ESMP/C-ESMP.
16	Could the Project affect resource efficiency, energy consumption or water use?		Incorporate resource efficiency measures into the design and ESMP.
17	Could reservoir drawdown be required during construction or rehabilitation?		Prepare a **Reservoir Drawdown Management Plan**, where required.
18	Could improved irrigation increase cropping intensity, expand or change crops, or increase pest pressure or pesticide use?		Promote good agricultural practices following MAF GAP guidelines
ESS4 – Community Health and Safety			
19	Could rehabilitation affect the structural safety of an existing dam?		Prepare a the required **Dam Safety Plans (DSP)**.
20	Will reservoir drawdown, reservoir operation, emergency releases, or rehabilitation activities pose risks to downstream communities, public infrastructure, or water users?		Prepare and implement, as appropriate, a Reservoir Drawdown Management Plan (RDMP), Emergency Preparedness Plan (EPP), Dam Safety Plan (DSP), Community Health and Safety Plan (CHSP), and emergency communication procedures to protect downstream communities and water users.
21	Could rehabilitation affect spillway capacity, embankment stability, seepage control or outlet works?		Include these assessments in the **DSPs**.
22	Could dam failure or reservoir operation pose risks to downstream communities?		Prepare a **Dam Break Analysis (DBA)** and **Emergency Preparedness Plan (EPP)**.
23	Will reservoir operation change following rehabilitation?		Prepare or update an **Operation and Maintenance Plan (O&MP)**.
24	Will new instrumentation or monitoring systems be installed?		Prepare an **Instrumentation Plan (IP)**.
25	Could construction activities affect community health and safety?		Prepare a **Community Health and Safety Plan (CHSP)**.
26	Could construction traffic create risks to local communities?		Prepare a **Traffic Management Plan (TMP)**.
27	Are emergency response arrangements required?		Prepare **Emergency Response Procedures** within the ESMP/C-ESMP and the **EPP**, where applicable.
28	Is the subproject located in or near an area with potential Unexploded Ordnance (UXO)		• Engage a certified UXO agencies to conduct surveys and clearance in

No.	Screening Question (Including Indicative Risks/Impacts)	Yes/No /NA	Required Action if "Yes"
	contamination that could cause fatalities or injuries to workers or communities during construction? • Identify potential UXO-contaminated sites based on consultation with local authorities and communities. • Verify through available UXO risk maps or NRA records.		accordance with National Regulatory Authority (NRA) procedures. • No construction or site activity shall commence until UXO clearance is completed and certificate is issued by NRA. • Include UXO clearance certificate in ESMP documentation.
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement			
29	Will land acquisition or restrictions on land use occur?		Prepare and implement an **RP/S-RP** in accordance with the RPF.
30	Will temporary land be required for camps, storage areas or construction?		Document agreements and include mitigation measures in the ESMP and RP/S-RP, where applicable.
31	Will vulnerable households be disproportionately affected?		Include targeted assistance and monitoring in the RP/S-RP.
32	Will livelihoods or access to natural resources be affected?		Include livelihood restoration measures in the RP/S-RP.
33	Will voluntary land donation be proposed?		Apply the Voluntary Land Donation Protocol in accordance with the RPF.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources			
34	Could the Project affect protected areas, natural habitats, aquatic ecosystems or biodiversity?		Conduct a biodiversity assessment, and Prepare a **Biodiversity Management Plan (BMP)** or incorporate biodiversity measures into the ESMP.
35	Will Project activities alter reservoir operation, water releases, reservoir drawdown, natural drainage, environmental flows, aquatic habitats, fisheries, wetlands, or ecosystem services?		Incorporate appropriate mitigation measures into the ESMP, BMP, Water Allocation Plan (WAP) and, where required, the Reservoir Drawdown Management Plan, including measures to maintain environmental flows, protect aquatic habitats and downstream ecosystems, and monitor ecological impacts.
36	Could invasive alien species be introduced or spread?		Include prevention and monitoring measures in the ESMP/BMP.
37	Could workers engage in hunting, fishing or collection of forest products?		Apply the Biodiversity Code of Conduct and monitor compliance.
ESS7 – Indigenous Peoples / Ethnic Groups			
38	Are Ethnic Groups present in or collectively attached to the Project area?		Prepare and implement an **EGEP**, where required.
39	Could Project activities affect customary lands, livelihoods or natural resources of Ethnic Groups?		Update the EGEP and apply FPIC where required.
40	Could Project activities affect cultural identity, traditions or institutions of Ethnic Groups?		Include culturally appropriate mitigation measures in the EGEP.
ESS8 – Cultural Heritage			

No.	Screening Question (Including Indicative Risks/Impacts)	Yes/No /NA	Required Action if "Yes"
41	Could Project activities affect archaeological sites, cemeteries, temples, sacred sites or other cultural heritage resources?		Prepare **Cultural Heritage Management Measures** and implement the **Chance Find Procedure (CFP)**.
42	Could excavation uncover archaeological remains or graves?		Include the **CFP** in contracts and suspend works upon discovery.
43	Could construction vibration or heavy equipment affect nearby cultural heritage structures?		Include protection and monitoring measures in the ESMP/C-ESMP.
ESS10 – Stakeholder Engagement and Information Disclosure			
44	Are affected communities, Water User Groups (WUGs), women, vulnerable groups or Ethnic Groups present?		Implement the **Stakeholder Engagement Plan (SEP)** and conduct meaningful consultations.
45	Are culturally appropriate consultation methods required?		Use local languages, interpreters and inclusive consultation approaches in accordance with the SEP and EGEP.
46	Has the Project GRM, Worker GRM, Resettlement GRM and SEA/SH GRM been established and disclosed?		Establish and operationalize all Project GRMs.
47	Are the required E&S instruments subject to consultation and disclosure?		Disclose the relevant E&S instruments in accordance with the SEP before implementation.
Conclusion of the ES Screening Checklist (*to be filled out by the screener*)			
• *Insert text here* • …			
Date:		**Signature:**	

3. Part C – Climate Risk Screening and Follow-Up

For each relevant hazard, record the available evidence, potential effects, required follow-up and responsible party. Where information is insufficient, treat the hazard as relevant until further assessment resolves the uncertainty. Carry all required actions into the screening conclusion.

Hazard	*Evidence and potential effects*	*Required assessment or measure, responsible party and due stage*
Extreme rainfall and flooding		
Drought and seasonal water availability		
Landslides, erosion and sedimentation		
Heat stress		
Other relevant hazard		

4. Part D – ES Screening Conclusion

As described in Chapter 5.1.4

10.3 Annex 3 – Guidance and Templates for Preparation of Site-Specific Environmental and Social Instruments

In accordance with the World Bank Environmental and Social Framework (ESF), particularly **Environmental and Social Standard 1 (ESS1): Assessment and Management of Environmental and Social Risks and Impacts**, together with other applicable Environmental and Social Standards (ESSs), and the national legal framework of the Lao PDR, including the **Environmental Protection Law No. 53/NA (2024)**, **Decree on Environmental Impact Assessment No. 389/GOL (2022)**, the **Ministerial Instruction on the List of Investment Projects and Activities Requiring Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) (2023)**, and the **Dam Safety Law (2022)**, all WISER subprojects shall undergo environmental and social screening to determine the type and scope of environmental and social assessment and management instruments required.

Depending on the nature, scale, location, and significance of the identified environmental and social risks and impacts, one or more site-specific environmental and social instruments may be required, including, as appropriate:

- **Site-Specific Environmental and Social Impact Assessment (ESIA);**
- **Site-Specific Environmental and Social Management Plan (ESMP),** incorporating, as appropriate, the Main Construction Environmental and Social Management Plan, Traffic Management Plan (TMP), Community Health and Safety Plan (CHSP), Labour Management Procedures (LMP) and Occupational Health and Safety (OHS) Plan, Worker Camp Management Plan, Waste Management Plan (WMP), Biodiversity Management Plan (BMP), Cultural Heritage Management Measures including the Chance Find Procedure (CFP), Borrow Area and Quarry Management Plan, Spoil Disposal Management Plan, Stakeholder Engagement and Grievance Redress Mechanism (GRM) procedures, Emergency Response Procedures, Pollution Prevention Measures, Erosion and Sediment Control Measures, Hazardous Materials Management Measures, and other site-specific management measures identified through the environmental and social screening and assessment process;
- **Construction Supervision and Quality Assurance (CSQAP)**
- **Instrumentation Plan (IP)**
- **Operation and Maintenance Plan (O&MP);**
- **Emergency Preparedness Plan (EPP);**
- **Resettlement Plan (RP/S-RP), where required;**
- **Ethnic Group Engagement Plan (EGEP), where required;** and
- **Other environmental and social instruments or management plans identified through the environmental and social screening and assessment process, as appropriate.**

The following sections outline the procedures for screening, preparation, review, approval, disclosure, implementation, monitoring, and updating of these site-specific environmental and social instruments.

1. Environmental and Social Screening

The process begins with the PMU, supported by the E&S Consultant (Firm), FS & DED Consultant, PIUs, and other relevant technical specialists, undertaking environmental and social screening for each proposed subproject using the screening form provided in **Annex 2** of this ESMF. The screening determines:

- the environmental and social risk classification;
- applicable World Bank ESSs;
- applicable national environmental assessment requirements (IEE or EIA);
- required environmental permits and approvals;
- and the site-specific environmental and social instruments required for the subproject.

The screening shall also identify sensitive receptors, including reservoirs, downstream communities, irrigation command areas, protected areas, wetlands, critical habitats, cultural heritage sites, schools, health facilities, water supply systems, ethnic groups, and vulnerable communities.

2. Scoping Report and Terms of Reference (ToR) for the ESIA Study

Where an **Environmental and Social Impact Assessment (ESIA)** is required, the PMU, supported by the **FS & DED Consultant** and the **E&S Consultant (Firm)**, shall prepare a **Scoping Report** and **Terms of Reference (ToR)** for the ESIA study, proportionate to the nature, scale, location, and significance of the identified environmental and social risks and impacts.

The **Scoping Report** shall define the scope of the ESIA study, identify key environmental and social issues, applicable World Bank Environmental and Social Standards (ESSs), relevant national legal requirements, assessment boundaries, alternatives to be assessed, baseline data requirements, stakeholder engagement approach, and specialist studies required.

The **ToR for the ESIA study** shall define the objectives, scope of work, assessment methodology, consultation and disclosure requirements, specialist studies, reporting requirements, deliverables, implementation schedule, and qualifications of the consulting team. The ToR shall ensure that the ESIA adequately assesses all applicable environmental and social risks and impacts and identifies appropriate mitigation measures and site-specific environmental and social instruments in accordance with the ESMF, ESCP, applicable ESSs, and relevant national legislation.

For subprojects subject to both **World Bank** and **MAE** environmental assessment requirements, the Project shall prepare **a single Scoping Report and ToR**, to the extent practicable, that satisfies the requirements of both the World Bank ESF and the national EIA process to avoid duplication.

The Scoping Report and ToR shall be submitted to the **World Bank** for review and No Objection (where required) and to the **Ministry of Agriculture and Environment (MAE)** or other competent authority for review and approval in accordance with the applicable national environmental assessment procedures before commencement of the ESIA study.

3. Preparation of Site-Specific Environmental and Social Instruments

Qualified consultants shall prepare the required site-specific environmental and social instruments in accordance with the approved ToR, applicable ESSs, national legislation, and this ESMF.

Depending on the screening results, the required instruments may include an ESIA, ESMP, C-ESMP, CSQAP, IP, O&MP, EPP, WAP, BMP, RP/S-RP, EGEP, CHSP, TMP, CFP, and other management plans identified during screening.

Each instrument shall include appropriate baseline information, assessment of risks and impacts, mitigation measures, monitoring requirements, institutional responsibilities, implementation schedule, reporting requirements, and budget.

4. Stakeholder Consultation and Information Disclosure

Draft environmental and social instruments shall be disclosed and consulted in accordance with the SEP, ESS10, and applicable national requirements.

Meaningful consultations shall be undertaken with affected communities, Water User Groups (WUGs), downstream communities, ethnic groups, women, vulnerable groups, local authorities, and other relevant stakeholders. Comments received during consultation shall be documented and incorporated into the final documents.

5. Internal Review and Quality Assurance

The PMU, with support from the E&S Consultant (Firm), shall review all site-specific environmental and social instruments prepared by the FS & DED Consultant to ensure consistency with:

- the ESMF;
- the ESCP;
- applicable ESSs;
- national legislation;
- and project design requirements.

The review shall also verify that all required mitigation measures and management plans have been adequately incorporated into the engineering design, bidding documents, and contract documents.

6. Review and Approval

Following internal review, the required environmental and social instruments shall be submitted to the World Bank (where applicable) for review and No Objection.

Where required under national legislation, the ESIA, ESMP, or IEE documentation shall also be submitted to the Ministry of Agriculture and Environment (MAE) for review and approval, and an Environmental Compliance Certificate (ECC) shall be obtained prior to commencement of civil works.

Dam Safety Plans and other dam safety documentation shall also be reviewed by the Panel of Experts (PoE), where applicable.

7. Public Disclosure

Following approval, the final environmental and social instruments shall be disclosed through the PMU website and appropriate local disclosure mechanisms in accordance with the SEP, ESS10, and national requirements.

8. Integration into Procurement and Contract Documents

The approved environmental and social instruments shall be incorporated into the detailed engineering design, bidding documents, and civil works contracts.

Contractors shall prepare and implement a Contractor Environmental and Social Management Plan (C-ESMP), consistent with the approved ESMP and contract requirements, prior to commencement of works.

9. Supervision, Monitoring, and Updating

Implementation of the approved environmental and social instruments shall be supervised by the PMU, E&S Consultant (Firm), ISWS, Panel of Experts (PoE), and other relevant specialists, in accordance with their respective responsibilities.

The instruments shall be reviewed and updated, as necessary, to reflect changes in project design, construction methods, site conditions, environmental and social risks, monitoring results, corrective actions, or regulatory requirements throughout the Project lifecycle.

Illustrative Table of Contents for Site-Specific Environmental and Social Impact Assessment (ESIA)

ABBREVIATIONS AND ACRONYMS
EXECUTIVE SUMMARY

1. INTRODUCTION

1.1 Project Background
1.2 Project Objectives
1.3 Project Description
1.4 Project Components
1.5 Project Location
1.6 Area of Influence
1.7 Associated Facilities
1.8 Environmental and Social Sensitive Receptors
1.9 Objectives and Scope of the ESIA
1.10 ESIA Methodology
1.11 Structure of the Report

2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK
2.1 National Policy and Legal Framework
Environmental Protection Law
EIA Decree
Dam Safety Law
Water and Water Resources Law
Irrigation Law
Land Law
Labour Law
Cultural Heritage Law
Other relevant legislation
2.2 Institutional Framework
2.3 World Bank Environmental and Social Framework
Applicable ESSs
Gap Analysis
WBG EHS Guidelines
Good International Industry Practice (GIIP)
2.4 International Conventions

3. PROJECT DESCRIPTION
3.1 Project Location
3.2 Existing Dam and Irrigation System
3.3 Proposed Rehabilitation Works
Dam rehabilitation
Spillway
Outlet works
Irrigation system
Reservoir improvements
Instrumentation
Ancillary facilities
3.4 Construction Methodology
3.5 Construction Schedule
3.6 Construction Materials
3.7 Construction Equipment
3.8 Workforce and Camps
3.9 Utilities
3.10 Alternatives Analysis
Without Project
Site alternatives
Design alternatives
Technology alternatives
Construction alternatives

4. ENVIRONMENTAL AND SOCIAL BASELINE

4.1 Physical Environment

Climate
Topography
Geology
Soils
Hydrology
Groundwater
Water Quality
Sedimentation
Natural Hazards
Climate Change

4.2 Biological Environment

Habitats
Flora
Fauna
Aquatic Ecology
Fisheries
Protected Areas
Critical Habitats
Ecosystem Services

4.3 Socio-economic Environment

Administrative Setting
Population
Ethnic Groups
Livelihoods
Agriculture
Irrigation
Water Users
Gender
Vulnerable Groups
Public Health
Education
Infrastructure

4.4 Cultural Heritage

Archaeology
Sacred Sites
Cemeteries
Temples
Intangible Cultural Heritage

5. ASSESSMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

5.1 Assessment Methodology

5.2 Construction Phase

Physical Environment
Biological Environment
Socio-economic Environment
Occupational Health and Safety
Community Health and Safety
Cultural Heritage

5.3 Operation Phase

Dam Safety
Reservoir Operation

Water Allocation
Environmental Flow
Irrigation Operation
Dam Maintenance
Emergency Preparedness

5.4 Climate Change Risks

5.5 Cumulative Impact Assessment

5.6 Analysis of Alternatives

5.7 Summary of Environmental and Social Risks and Mitigation Measures

ESS	Project Activity / Source of impacts	Extent of risks/impacts	Duration	Risks without mitigation measures in place	Mitigation measures (MM) and E&S Sub-plans Ref.	Residual risks after MM
ESS1: Assessment and Management of Environmental and Social Risks and Impacts						
ESS2: Labor and Working Conditions						
ESS3: Resource Efficiency and Pollution Prevention and Management						
ESS4: Community Health and Safety						
ESS5: Land Acquisition, Restrictions on Land Use And Involuntary Resettlement						
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources						

ESS	Project Activity / Source of impacts	Extent of risks/impacts	Duration	Risks without mitigation measures in place	Mitigation measures (MM) and E&S Sub-plans Ref.	Residual risks after MM
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities						
ESS8: Cultural Heritage						
ESS10: Stakeholder Engagement and Information Disclosure.						

6. STAKEHOLDER ENGAGEMENT
6.1 Consultation Methodology
6.2 Stakeholders
6.3 Consultations Conducted
6.4 Consultation Results
6.5 Information Disclosure
6.6 Future Engagement
6.7 Grievance Redress Mechanism

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING
7.1 Environmental and Social Management Plan (ESMP)
7.2 Environmental Monitoring Plan
7.3 Institutional Responsibilities
7.4 Capacity Building
7.5 Reporting
7.6 Implementation Schedule
7.7 Budget

8. SITE-SPECIFIC ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS
As applicable:
Contractor Environmental and Social Management Plan (C-ESMP)
Constructions Supervision and Quality Assurance Plan (CSQAP)
Instrumentation Plan (IP)
Operation and Maintenance Plan (O&MP)
Emergency Preparedness Plan (EPP)
Water Allocation Plan (WAP)
Biodiversity Management Plan (BMP)
Resettlement Plan (RP/S-RP)
Ethnic Group Engagement Plan (EGEP)
Community Health and Safety Plan (CHSP)

Traffic Management Plan (TMP)
Occupational Health and Safety Plan (OHS Plan)
Waste Management Plan (WMP)
Worker Camp Management Plan
Borrow Area and Quarry Management Plan
Spoil Disposal Plan
Erosion and Sediment Control Plan
Pollution Prevention Plan
Hazardous Materials Management Plan
Cultural Heritage Management Measures and Chance Find Procedure (CFP)

9. CONCLUSIONS
9.1 Summary of Key Findings
9.2 Environmental and Social Acceptability
9.3 Commitments
REFERENCES
APPENDICES
Screening Form
Consultation Records
Photographs
Maps
Baseline Data
Monitoring Forms
Specialist Studies
Hydrological Studies
Dam Safety Assessment
Dam Break Analysis (DBA)
Inundation Maps
Engineering Drawings
Other Supporting Information

Illustrative Table of Contents for Site-Specific Environmental and Social Management Plan (ESMP)

ABBREVIATIONS AND ACRONYMS
EXECUTIVE SUMMARY

1. INTRODUCTION
1.1 Project Background
1.2 Project Objectives
1.3 Project Location
1.4 Area of Influence
1.5 Project Activities
1.6 Construction Schedule
1.7 Objectives of the ESMP

2. POLICY, LEGISLATIVE AND INSTITUTIONAL FRAMEWORK
2.1 National Legal and Regulatory Framework
(Summary with reference to the ESIA)
2.2 World Bank Environmental and Social Framework
(Applicable ESSs and reference to the ESIA)
2.3 Institutional Arrangements

3. SUMMARY OF ENVIRONMENTAL AND SOCIAL BASELINE

(Summarize only and refer to the ESIA)

Aspect	Key Summary
Physical Environment	
Biological Environment	
Socio-economic Environment	
Cultural Heritage	
Dam Safety and Water Resources	

4. SUMMARY OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

4.1 Positive Impacts

4.2 Key Environmental and Social Risks

4.3 Summary of Mitigation Measures

Table A-1 Summary of Environmental and Social Risks, Impacts and Mitigation Measures

ESS	Subproject activities	E&S Risks and Impacts	Mitigation measures	Responsibility	Notes
ESS1: Assessment and Management of Environmental and Social Risks and Impacts					
ESS2: Labor and Working Conditions					
ESS3: Resource Efficiency and Pollution Prevention and Management					
ESS4: Community Health and Safety					
ESS5: Land Acquisition, Restrictions on Land Use And Involuntary Resettlement					

ESS	Subproject activities	E&S Risks and Impacts	Mitigation measures	Responsibility	Notes
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources					
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.					
ESS8: ESS8: Cultural Heritage					
ESS10: Stakeholder Engagement and Information Disclosure.					

5. ENVIRONMENTAL AND SOCIAL MANAGEMENT MEASURES
5.1 Design Stage
5.2 Pre-Construction Stage
5.3 Construction Stage
5.4 Operation and Maintenance Stage
5.5 Contractor Environmental and Social Management
5.6 Dam Safety Management
5.7 Water Allocation and Reservoir Management
5.8 Stakeholder Engagement and Information Disclosure
5.9 Grievance Redress Mechanism
5.10 Capacity Building and Training
5.11 Climate Change Adaptation

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS
Summary and refer details in Annexes

7. IMPLEMENTATION ARRANGEMENTS
7.1 Project Management Unit (PMU)
7.2 Component Management Unit (CMU)
7.3 Project Implementation Unit (PIU)
7.4 Environmental and Social Consultant (Firm)
7.5 Implementation Support and Works Supervision Consultant (ISWS)
7.6 Panel of Experts (PoE)
7.7 Contractors

7.8 Environmental and Social Monitoring Committee (ESMC)
7.9 Provincial and District Resettlement Committees (PRC/DRC)
7.10 Grievance Redress Committees (GRCs)
7.11 Water User Groups (WUGs) and Communities

8. ENVIRONMENTAL AND SOCIAL MONITORING AND REPORTING
8.1 Environmental and Social Monitoring
8.2 Environmental and Social Reporting

Table A-2 Environmental and Social Monitoring Plan

WB's ESS	Monitoring Activities	Means of verification	Monitoring Frequency	Responsibility
ESS1: Assessment and Management of Environmental and Social Risks and Impacts				
ESS2: Labor and Working Conditions				
ESS3: Resource Efficiency and Pollution Prevention and Management				
ESS4: Community Health and Safety				
ESS5: Land Acquisition, Restrictions on Land Use And Involuntary Resettlement				
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources				
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.				
ESS8: ESS8: Cultural Heritage				
ESS10: Stakeholder Engagement and Information Disclosure.				

8.3 Incident and Accident Reporting (ESIRT)

9. IMPLEMENTATION SCHEDULE

Implementation schedule for mitigation measures, monitoring, reporting, training, and supervision.

10. ESMP BUDGET

Budget for implementation, monitoring, supervision, training, stakeholder engagement, and reporting.

ANNEXES

Annex 1. Environmental and Social Management Plans

- Main Construction E&S Management Plan
- Traffic Management Plan (TMP)
- Community Health and Safety Plan (CHSP)
- Labour Management Procedures (LMP) and Occupational Health and Safety (OHS) Plan
- Worker Camp Management Plan
- Waste Management Plan (WMP)
- Biodiversity Management Plan (BMP), where required
- Cultural Heritage Management Measures and Chance Find Procedure (CFP)
- Borrow Area, Quarry and Spoil Disposal Management Plan
- Pollution Prevention Plan
- Erosion and Sediment Control Plan
- Hazardous Materials Management Plan
- Reservoir Drawdown Management Plan (where required)
- Instrumentation Plan
- Emergency Response Procedures
- Stakeholder Engagement and GRM Procedures

Illustrative Table of Contents for Contractor Environmental and Social Management Plan (C-ESMP)

The Contractor shall prepare a **Contractor Environmental and Social Management Plan (C-ESMP)** based on the approved **Environmental and Social Management Plan (ESMP)** within **60 days after Contract Award and prior to commencement of civil works**.

The C-ESMP shall describe how the Contractor will implement the environmental, social, health, and safety (ESHS) requirements specified in the ESMP, bidding documents, contract conditions, ESCP, applicable Environmental and Social Standards (ESSs), Environmental Compliance Certificate (ECC), and other applicable national requirements.

The preparation and approval process includes the following steps.

1. Preparation by Contractor

- Prepare the C-ESMP consistent with the approved ESMP and contractual ESHS requirements.
- Develop detailed construction methodologies, implementation arrangements, monitoring procedures, emergency response arrangements, staffing, schedules, and resources.
- Prepare all construction-related management plans required under the Contract.

2. Review by ISWS

- Submit the draft C-ESMP to the **Implementation Support and Works Supervision Consultant (ISWS)**.
- ISWS shall review the C-ESMP for compliance with the ESMP, ESCP, contract requirements, ESSs, and national legislation.
- The Contractor shall revise the C-ESMP to address ISWS comments.

3. Review by E&S Consultant (Firm)

- The E&S Consultant (Firm) shall review the revised C-ESMP, where required, and provide technical advice to the PMU regarding compliance with the Project ESF requirements.

4. Approval by PMU

- The PMU shall approve the C-ESMP prior to commencement of civil works.

5. Implementation

- The Contractor shall fully implement the approved C-ESMP throughout construction.
- The ISWS shall supervise implementation.
- The E&S Consultant (Firm) shall undertake periodic compliance monitoring.
- The PMU shall provide overall oversight.

6. Updating

The C-ESMP shall be reviewed and updated whenever:

- construction methods change;
- new risks are identified;
- corrective actions are required;
- engineering design changes occur; or
- requested by the PMU or ISWS.

All revisions shall be reviewed by the ISWS and approved by the PMU before implementation.

TABLE OF CONTENTS**:**

ABBREVIATIONS & ACRONYMS
EXECUTIVE SUMMARY

1. INTRODUCTION

1.1 Project Background
1.2 Purpose of the C-ESMP
1.3 Contractor Information
1.4 Scope of Works
1.5 Objectives

2. PROJECT DESCRIPTION
2.1 Project Location
2.2 Construction Activities
2.3 Construction Methodology
2.4 Construction Schedule
2.5 Construction Equipment
2.6 Construction Workforce
2.7 Worker Camps
2.8 Material Sources
Borrow Areas
Quarries
Spoil Disposal Areas
Storage Areas
2.9 Temporary Facilities

3. POLICY, LEGISLATIVE AND CONTRACTUAL REQUIREMENTS
3.1 National Legal Requirements
3.2 Applicable World Bank ESSs
3.3 Contractual ESHS Requirements
3.4 Environmental Compliance Certificate (ECC) Conditions
3.5 Relevant Project E&S Instruments
ESMP
CSQAP
IP
O&MP
EPP
WAP (where applicable)
RP
EGEP
Other approved Project instruments

4. SITE ENVIRONMENTAL AND SOCIAL CONDITIONS
(Brief summary only with reference to the ESIA/ESMP.)

5. ENVIRONMENTAL AND SOCIAL RISKS AND MITIGATION MEASURES
5.1 Construction Activities
5.2 Environmental Risks
5.3 Social Risks
5.4 Occupational Health and Safety Risks
5.5 Community Health and Safety Risks
5.6 Dam Safety Risks During Construction
5.7 Emergency Risks
5.8 Summary of Mitigation Measures

Subproject Activities	E&S Risks and Impacts	Mitigation Measures
ESS1: Assessment and Management of Environmental and		

Subproject Activities	E&S Risks and Impacts	Mitigation Measures
Social Risks and Impacts		
ESS2: Labor and Working Conditions		
ESS3: Resource Efficiency and Pollution Prevention and Management		
ESS4: Community Health and Safety		
ESS5: Land Acquisition, Restrictions on Land Use And Involuntary Resettlement		
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources		
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.		
ESS8: ESS8: Cultural Heritage		
ESS10: Stakeholder Engagement and Information Disclosure.		

6. CONSTRUCTION ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

Summary and refer details in Appendixes

7. IMPLEMENTATION ARRANGEMENTS

7.1 Contractor Organization

7.2 ESHS Personnel

7.3 Roles and Responsibilities

7.4 Subcontractor Management

7.5 Training and Capacity Building

8. STAKEHOLDER ENGAGEMENT AND GRIEVANCE REDRESS
8.1 Stakeholder Engagement
8.2 Information Disclosure
8.3 Community Relations
8.4 Grievance Redress Mechanism
8.5 Worker Grievance Mechanism
8.6 SEA/SH Reporting and Referral Procedures

9. MONITORING, REPORTING AND INCIDENT MANAGEMENT
9.1 Monitoring Programme
9.2 Daily Inspections
9.3 Monthly ESHS Progress Reports
9.4 Incident and Accident Reporting (ESIRT)
9.5 Corrective Actions

Table A-3 Environmental and Social Monitoring Plan

WB's ESS	Monitoring Activities	Means of verification	Monitoring Frequency	Responsibility
ESS1: Assessment and Management of Environmental and Social Risks and Impacts				
ESS2: Labor and Working Conditions				
ESS3: Resource Efficiency and Pollution Prevention and Management				
ESS4: Community Health and Safety				
ESS5: Land Acquisition, Restrictions on Land Use And Involuntary Resettlement				
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources				
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.				

WB's ESS	Monitoring Activities	Means of verification	Monitoring Frequency	Responsibility
ESS8: ESS8: Cultural Heritage				
ESS10: Stakeholder Engagement and Information Disclosure.				

10. IMPLEMENTATION SCHEDULE

11. C-ESMP BUDGET

ANNEXES

- Annex 1 – Main Construction E&S Management Plan
- Annex 2 – Occupational Health and Safety (OHS) Plan
- Annex 3 – Worker Camp Management Plan
- Annex 4 – Waste Management Plan
- Annex 5 – Pollution Prevention Plan
- Annex 6 – Erosion and Sediment Control Plan
- Annex 7 – Hazardous Materials Management Plan
- Annex 8 – Borrow Area, Quarry and Spoil Disposal Management Plan
- Annex 10 – Traffic Management Plan (TMP)
- Annex 11 – Community Health and Safety Plan (CHSP)
- Annex 12 – Biodiversity Protection Measures
- Annex 13 – Cultural Heritage Management Measures and Chance Find Procedure (CFP)
- Annex 14 – Emergency Response Procedures
- Annex 15 – Stakeholder Engagement and GRM Procedures
- Annex 16 – Reservoir Drawdown Management Measures (where required)
- Annex 17 – Instrumentation Protection Measures (where required)
- Annex 18 – UXO Risk Management Measures (where required)

10.4 Annex 4 – Emergency Preparedness Plan Framework (EPPF)

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Peace Independence Democracy Unity Prosperity

Ministry of Agriculture and Environment · Department of Irrigation

EMERGENCY PREPAREDNESS PLAN (EPP) FRAMEWORK FOR IRRIGATION DAMS

Also referred to nationally as the Emergency Action Plan (EAP)

Applicable to ALL irrigation dams in Lao PDR — all sizes, all hazard levels

Version 2.0 · July 2026

REFERENCE DOCUMENTS

Law on Dam Safety, Lao PDR, No. 52/NA (7 July 2022) · Dam Safety Guidelines, Lao PDR (December 2018) · Draft (amended) Law on Irrigation, Lao PDR · Decree No. 19/PM on the National Water Management Committee (26 February 2026) · World Bank Good Practice Note on Dam Safety (2020) · World Bank Emergency Preparedness Plan Sample Framework, GWSP, Appendix 4 (March 2021) · Terms of Reference for Emergency Action Plans, MEM / Damwatch Engineering, Lao PDR.

Prepared under World Bank technical assistance to MAE / Department of Irrigation. Incorporates review comments of the World Bank Senior Dam Specialist dated 20 July 2026.

11. Status of this Framework and How to Read It

This is Version 2.0 of the Emergency Preparedness Plan (EPP) Framework for irrigation dams in Lao PDR. It revises Version 1.0 (May 2026) to respond to the World Bank review of 20 July 2026 and to align the emergency-level structure with the World Bank EPP Sample Framework (2021) and the Nam Beng Emergency Action Plan example.

11.1.1 Principal changes from Version 1.0

- Emergency classification expanded from three to FOUR levels, to match the World Bank Sample Framework and Lao practice (Nam Beng EAP). Version 1.0 omitted the "large flood discharge without dam failure" level; this is now Level 1. See Section 6 and the note there.
- Regulatory approval authority stated unambiguously as MAE / Department of Irrigation throughout; the distinct coordination role of the NWMC is separated from regulatory approval (Sections 2 and 7).
- A legal-gap section added, with the recommended amendment to the Law on Irrigation and an interim MAE Ministerial Directive pathway (Section 3).
- Minimum-cost exercise formats and one- to two-page After-Action Report templates added for Low and Significant hazard dams (Section 13 and Annex G).
- Community liaison strengthened to require active assessment of ethnic-minority and multilingual needs (Section 12).
- Institutional names updated to the current MAE / MoIC structure; ministry-transition note added (Sections 2 and 3).
- New Section 2 added: Lao PDR institutional and administrative context (central/provincial/district tiers, ministries, NWMC structure, and the size-based chain of responsibility).
- Notification flowcharts added for all four alert types (Section 6.4), adapted from the Nam Beng EAP into the irrigation-dam notification chain.
- Emergency response process added (Section 8): the four-step process and a detection–evaluation–classification table calibrated to earthfill irrigation dams, following the Nam Beng structure.
- Emergency Response Matrix expanded to the full six-event-type WB matrix (Annex E), and the WB embankment-dam anomaly table added as Annex F; people-at-risk / potential-loss-of-life and large-flood (200–1,000-yr) inundation-map requirements added to Section 11.
- Consistency pass against the MEM/MoIC (Damwatch) hydropower EAP ToR: each emergency level now shows its ToR name with a reconciliation note (Section 6); a regulator/legal crosswalk added (Section 3.3); construction/impounding/operational stage EPPs added (Section 1.3); exercise frequency noted against the ToR baseline (Section 13).
- A tiered Simplified EPP/EAP Checklist is issued as a companion operational tool (referenced in Section 5 and Annex H).

HOW THE CALLOUT BOXES WORK

Green boxes marked WB REQUIREMENT set out obligations that apply to World Bank–financed dams under the Good Practice Note (2020) and EPP Sample Framework (2021). Amber NOTE boxes give guidance and clarifications. National baseline obligations appear in the running text and tables.

12. Contents

STATUS OF THIS FRAMEWORK AND HOW TO READ IT 108

CONTENTS 109

1. PURPOSE AND SCOPE 111

1.1 Purpose 111
1.2 Scope of Application 111
1.3 EPP stages over the dam life cycle 111
1.4 Terminology 112
1.5 How the EPP fits: versions over time, and the dam safety document system 113

2. LAO PDR INSTITUTIONAL AND ADMINISTRATIVE CONTEXT 115

2.1 The three tiers of government 115
2.2 Key ministries and what they do for irrigation dams 115
2.3 The National Water Management Committee (NWMC) — coordination, not approval 115
2.4 Size-based chain of responsibility (draft Law on Irrigation) 116
2.5 A note on institutional names in transition 116

3. OWNER RESPONSIBILITY AND LEGAL FRAMEWORK 117

3.1 Primary Responsibility of the Dam Owner 117
3.2 The Legal Gap — and How This Framework Addresses It 117
3.3 Regulatory Approval Authority 117
3.4 Legal and Regulatory Requirements 118

4. REQUIRED EPP DOCUMENT STRUCTURE 119

4.1 Appendices A–L — titles and content 120

5. HAZARD CLASSIFICATION AND PROPORTIONATE EPP CONTENT 121

6. EMERGENCY LEVEL CLASSIFICATION — FOUR LEVELS 122

7. NOTIFICATION PROCEDURES AND CONTACT LIST 124

6.1 Notification Flowchart 124
6.2 Mandatory Contacts and Timeframes 124
6.3 Communication Methods 124
6.4 Notification Flowcharts for the Four Alert Types 125

8. EMERGENCY RESPONSE PROCESS AND ACTIONS 129

8.1 The four-step response process 129
8.2 Detection, evaluation and classification (earthfill irrigation dams) 129
8.3 Preventive and emergency actions by level 130
8.4 Termination and post-incident documentation 130

9. ROLES AND RESPONSIBILITIES 131

10. PREPAREDNESS ACTIVITIES 132

11. DAM BREACH ANALYSIS, INUNDATION MAPS AND CONSEQUENCE ASSESSMENT 133

11.1 DBA requirements by hazard level 133
11.2 Mandatory failure scenarios 133
11.3 Using DBA results in the EPP 133
11.4 Consequence assessment (people at risk and potential loss of life) 133
11.5 Large-flood (no-failure) inundation maps 134

12. COMMUNITY LIAISON PROGRAMME 135

12.1 Requirements 135
12.2 Ethnic-minority and multilingual communities 135
12.3 Warning signals 135

13. TRAINING AND EXERCISE PROGRAMME 136

13.1 Training 136
13.2 Exercise schedule 136

14. IMPLEMENTATION: SUPPLEMENTARY PRODUCTS AND SEQUENCING 137

14.1 Recommended scope for a specialist consultant (e.g. Damwatch) 137

15. EPP DOCUMENT CONTROL 138

15.1 Distribution 138
15.2 Review and update 138

ANNEX A — SAMPLE EPP TABLE OF CONTENTS 139

ANNEX E — EMERGENCY RESPONSE MATRIX (SAMPLE, IRRIGATION DAMS) 140

ANNEX F — EARLY IDENTIFICATION OF EMERGENCY CONDITIONS (EMBANKMENT DAMS) 141

ANNEX G — AFTER-ACTION REPORT TEMPLATE (LOW / SIGNIFICANT HAZARD, 1–2 PAGES) 142

ANNEX H — COMPANION DOCUMENTS 143

ANNEX I — USE OF THE NAM BENG EAP AS A REFERENCE ..... ERROR! BOOKMARK NOT DEFINED.

What was carried across ..... **Error! Bookmark not defined.**
What was deliberately NOT carried across ..... **Error! Bookmark not defined.**
Approval ..... **Error! Bookmark not defined.**

13. 1. Purpose and Scope

13.1 1.1 Purpose

This Emergency Preparedness Plan (EPP) Framework establishes the minimum requirements, structure, and content for Emergency Preparedness Plans — referred to in Lao national regulations as Emergency Action Plans (EAP) — for all irrigation dams (headworks) in the Lao People's Democratic Republic.

The EPP is the primary instrument for ensuring that dam owners, operators, regulatory authorities, and downstream communities are prepared to respond effectively to a dam emergency — or to a large water release that does not involve dam failure — so as to minimise loss of life and damage to property and the environment.

WB REQUIREMENT — World Bank Good Practice Note on Dam Safety (2020)

An EPP is required for ALL dams whose failure could endanger human life, regardless of size. No height or volume threshold applies. The EPP is prepared by the dam owner and kept up to date throughout the life of the dam.

13.2 1.2 Scope of Application

This Framework applies to all irrigation dams in Lao PDR, regardless of height or storage volume, including:

- All irrigation dams and their headworks, of all sizes (small < 100 ha, medium 100–1,000 ha, large > 1,000 ha command area);
- All dam hazard classifications: Low, Significant, High, and Extreme;
- New dams (EPP required before first filling) and existing dams (EPP to be prepared or brought up to date).

NOTE — Proportionality principle (WB EPP Sample Framework, 2021)

The level of detail of the EPP shall be commensurate with the hazard classification of the dam. A Low hazard dam may use a simplified EPP; High and Extreme hazard dams require a comprehensive EPP with full inundation mapping, a community liaison programme, and annual exercises. The companion tiered Checklist operationalises this principle.

13.3 1.3 EPP stages over the dam life cycle

Following the MEM/MoIC (Damwatch) ToR practice — adopted here as an MAE / Department of Irrigation requirement for irrigation dams — an EPP/EAP is prepared and approved at each of the following stages of a new dam's life, each addressing the conditions unique to that stage. Existing dams in operation prepare or update the operational-stage EPP.

Stage	Approve before	Focus of the stage-specific EPP
Construction stage	60 days before construction starts	Construction floods and diversion works; cofferdam failure; overtopping of the incomplete embankment; sequence-of-works vulnerability; hazard class may change as the fill/cofferdam height changes.
Impounding stage	6 months before first impoundment	First-filling risks: rapid reservoir rise, first loading of the embankment and conduits, seepage/piping emergence during initial saturation.
Operational stage	1 year before operation starts	Full life-cycle EPP, prepared in detail and updated for changing conditions; the version this Framework primarily addresses.

NOTE — stage EPPs and irrigation dams

Most existing irrigation dams need only the operational-stage EPP. The construction- and impounding-stage EPPs apply to NEW irrigation dams and to major rehabilitation that re-impounds a reservoir. The construction-stage EPP is particularly important for irrigation headworks built by fill placement across a live watercourse, where a construction-season flood on an incomplete embankment is a real failure path.

13.4 1.4 Terminology

Term	Definition
EPP	Emergency Preparedness Plan — World Bank preferred term (the more general instrument).
EAP	Emergency Action Plan — term used in Lao national regulations (Law on Dam Safety 2022; MEM/Damwatch ToR).
EPP / EAP	Used interchangeably in this document; both refer to the same instrument.
Dam owner	Entity responsible for dam safety: may be a government agency, private company, cooperative, or water user association.
DBA	Dam Breach Analysis — hydraulic analysis of dam-failure consequences.
Inundation map	Map showing the extent, depth, velocity, and timing of flooding resulting from a dam breach or a large release.
MAE / DOI	Ministry of Agriculture and Environment / Department of Irrigation — regulatory approval authority for irrigation dam EPPs.
NWMC	National Water Management Committee — established by Decree No. 19/PM (2026); inter-ministerial coordination body.
EMA	Emergency Management Authority — provincial/district disaster management committees and the Ministry of National Defence.

13.5 1.5 How the EPP fits: versions over time, and the dam safety document system

Two things are essential to understand before preparing an EPP: (a) that the EPP is not written once but MATURES through defined versions over the life of the dam, and (b) that the EPP is one document within an interlinked dam safety document system and depends on the others. The two figures below set out each idea in turn.

13.5.1 1.5.1 The EPP matures through versions

The EPP is a living document. It begins as a framework at project appraisal (Version 0), is developed into a full site-specific draft using final studies and dam-break analysis (Version 1), is finalised and endorsed by the authorities as the operational plan (Version 2), and is then tested and updated after exercises, real events, or significant changes (Version 3 and beyond). Each version has a defined purpose, content, and output, and each feeds the next through continuous improvement. This progression — and the parallel/supporting documents that feed the EPP — is shown in Figure 1.

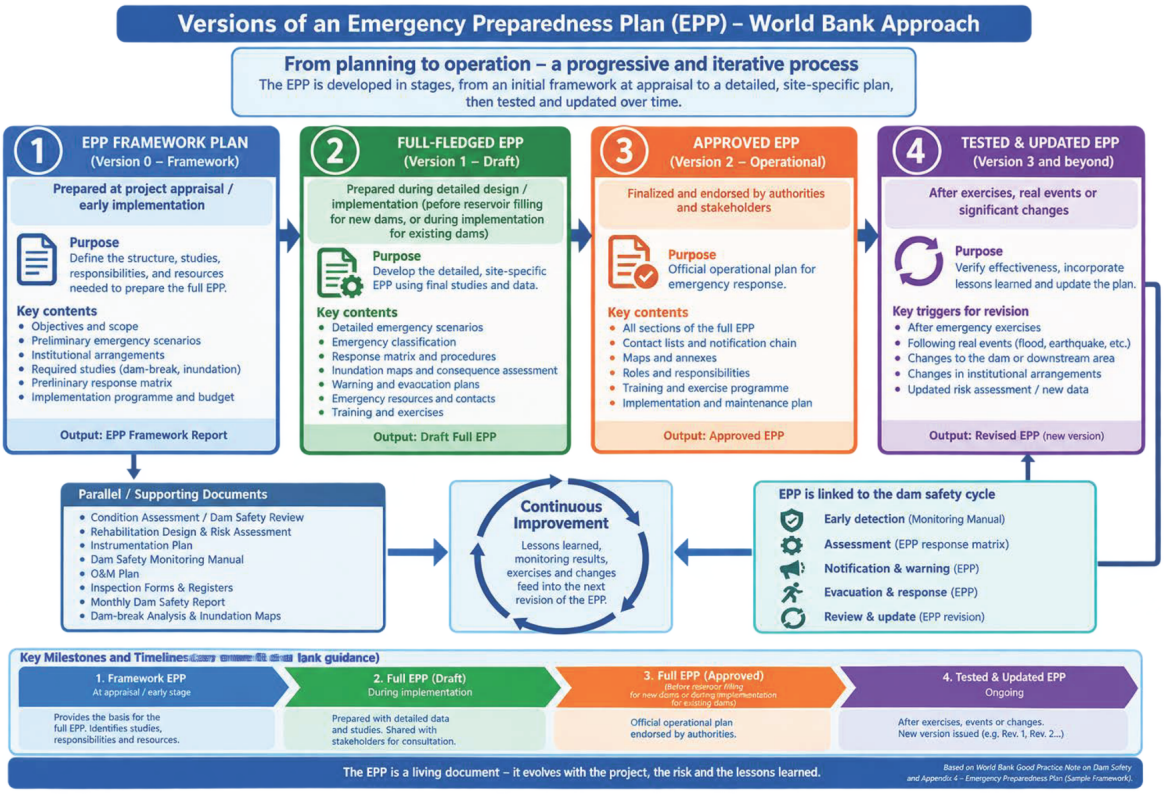


Figure 1 — Versions of an EPP over the project life cycle (World Bank approach). The EPP evolves from an appraisal-stage framework to a tested, regularly updated operational plan.

> **NOTE — this Framework document is the Version 0 instrument**
>
> *This national Framework corresponds to the "Version 0 / Framework" stage in Figure 1: it defines the structure, studies, responsibilities and resources needed to prepare each dam's full EPP. The stage-specific EPPs required over a dam's life (construction, impounding, operational — see Section 1.3) are the later versions built on this Framework.*

13.5.2 1.5.2 The EPP sits within the dam safety document system

An irrigation dam's safety is managed not by the EPP alone but by an integrated set of documents that inform one another — from condition assessment and design, through instrumentation, monitoring, operation and reporting, to the EPP and the management decisions that close the loop. The EPP (document 8) draws directly on several of the others: the Instrumentation Plan (3) and Dam Safety Monitoring Manual (4) define the trigger and alert levels that set the EPP's emergency levels; the Inspection Forms and Monitoring Data (6) and Monthly Dam Safety Report (7) are the surveillance records that detect the conditions the EPP responds to; and the dam-break analysis underpins the EPP's inundation maps. Figure 2 shows how the documents fit together.

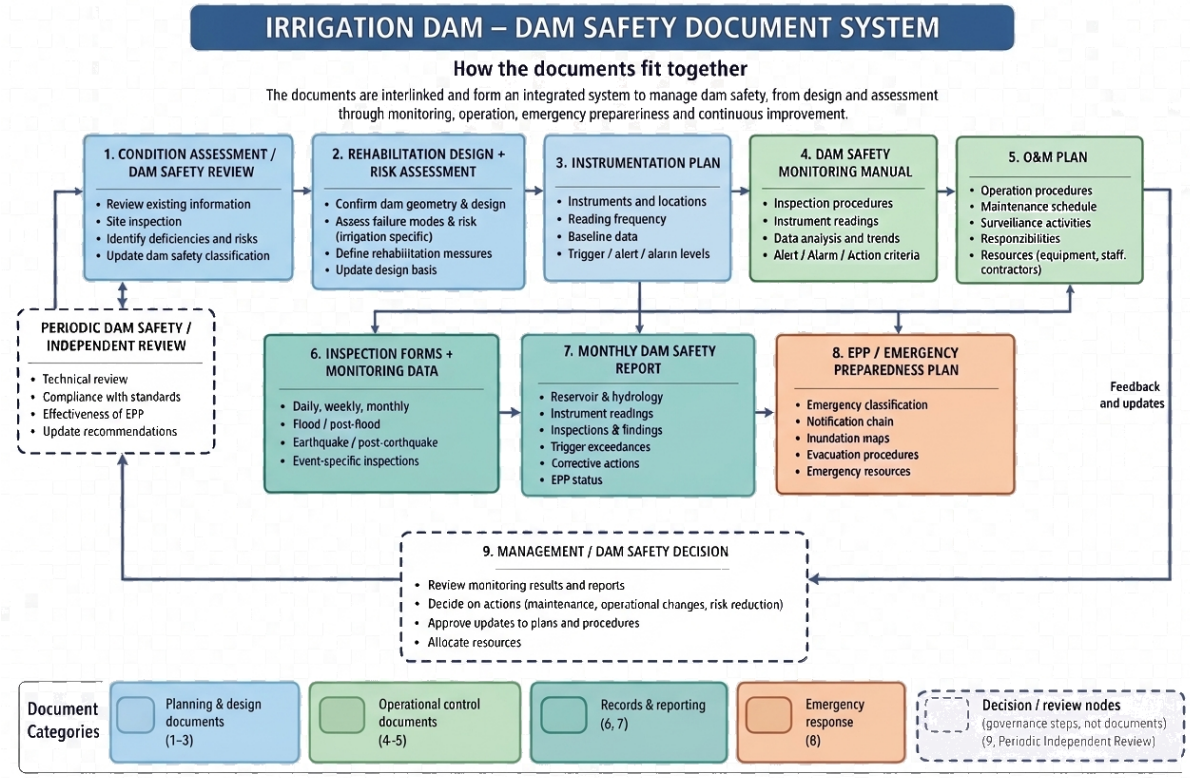


Figure 2 — The irrigation-dam safety document system. Documents are grouped by category (planning & design 1–3; operational control 4–5; records & reporting 6–7; emergency response 8); the Periodic Independent Review and the Management Decision (9) are governance steps, not documents. The EPP is document 8.

NOTE — the EPP depends on the linked documents

An EPP cannot be sound in isolation. If the Monitoring Manual (4) has no defined alert thresholds, the EPP's Level 2/3 triggers have nothing to key to; if the Monthly Report (7) is not produced, the conditions that should escalate an emergency may go unnoticed; if no dam-break analysis exists, the inundation maps and notification lead times cannot be set. The companion Checklist therefore verifies that these linked documents exist (see the Checklist's note on the document system).

14. 2. Lao PDR Institutional and Administrative Context

This Framework operates within Lao PDR's three-tier system of government — central, provincial, and district — and within the specific ministerial and committee structure established for water and dam management. Understanding this context is essential: a notification chain or approval pathway that ignores it will fail in practice. The arrangements below are drawn from the Law on Dam Safety (2022), the draft (amended) Law on Irrigation, and Decree No. 19/PM (2026).

14.1 2.1 The three tiers of government

Tier	Bodies	Role in irrigation-dam emergencies
Central	MAE (lead), MoIC, MPWT, Min. of National Defence, Min. of Finance, Min. of Health, PM Office; NWMC	Policy, regulation, EPP approval (DOI), national coordination (NWMC), rescue resources (Defence)
Provincial / Capital	Provincial Administrative Committee; Provincial Dept. of Agriculture & Environment (PAFO/DAFO equivalent); Provincial Water Management Committee	Provincial coordination, warnings, medium/small project oversight, activate provincial disaster response
District / Municipality	District Administrative Committee; District Agriculture & Environment Office; District/Municipality Irrigation Unit; village authorities	Front-line: relay warnings to villages, activate village evacuation, communal-project oversight

14.2 2.2 Key ministries and what they do for irrigation dams

Body	Responsibility relevant to the EPP
MAE — Dept. of Irrigation (DOI)	Lead ministry for irrigation dams. REGULATORY APPROVAL AUTHORITY for irrigation-dam EPPs. Manages study/design/construction of large-scale projects; issues technical guidance; hosts the Irrigation Development Fund. Sits on the NWMC Secretariat.
MAE — other departments	Water Resources, Meteorology & Hydrology (forecasts and early warnings), and the National Mekong Committee Secretariat all sit in MAE and support the NWMC Secretariat (which MAE heads).
MoIC — Dept. of Energy	Counterpart authority for HYDROPOWER dams (not irrigation). Relevant where an irrigation dam is downstream/upstream of a hydropower dam, or for cross-referencing the Nam Beng-type EAP practice.
Min. of National Defence	Rescue and relief; personnel, vehicles, logistics. Receives Level 3/4 notification; activates rescue operations.
MPWT	Drainage infrastructure, roads and bridges — relevant to access routes and downstream road/bridge inundation.
Min. of Health	Hospital disaster preparedness; mass-casualty response; receives casualties from a dam emergency.
Min. of Finance	Budget and emergency-fund allocation for water-management and disaster work.

14.3 2.3 The National Water Management Committee (NWMC) — coordination, not approval

Decree No. 19/PM (26 February 2026) establishes the NWMC as a non-permanent inter-ministerial body serving the Government. It is the coordination architecture into which irrigation-dam emergency notification feeds — but it does not approve EPPs (that is DOI's role). Its structure is itself three-tiered:

- **National NWMC.** Chaired by a Vice Prime Minister; MAE Minister is Vice-Chair and Standing Member; MoIC Minister is Vice-Chair. Members are Vice-Ministers of MPWT, National Defence, Finance, Health, the PM Office, and Vice-Chairs of Provincial Administrative Committees. Meets twice yearly (before dry and rainy seasons) and holds extraordinary meetings in emergencies.

- **NWMC Secretariat (at MAE).** Headed by the MAE Vice-Minister for water resources. Members include the Directors-General of Water Resources, Meteorology & Hydrology, IRRIGATION (DOI), and MoIC's Dept. of Energy. This is the working body that receives and coordinates emergency information.
- **Provincial Water Management Committees.** Chaired by the Deputy Chair of the Provincial Administrative Committee; Vice-Chairs are the heads of the Provincial Department of Agriculture & Environment and of Industry & Commerce; district chairs and relevant provincial heads are members. This is where national coordination meets local implementation.

NWMC EMERGENCY POWERS (Decree 19/PM, 2026)

The NWMC can issue orders and notifications to dams for emergency water releases, and can propose to the Government the declaration of flood/drought risk areas. Article 3 tasks it with disseminating dam-water-release warnings. For an irrigation-dam EPP this means: the Level 3/4 notification to the NWMC Secretariat is not a formality — it can trigger coordinated inter-ministerial action and, where relevant, orders to upstream/downstream dams.

14.4 2.4 Size-based chain of responsibility (draft Law on Irrigation)

The draft (amended) Law on Irrigation assigns project responsibility by scale and cost. This chain maps naturally onto EPP tiering — the authority that manages the project is the natural front-line authority in an emergency and the natural addressee for the EPP at that level:

Project scale	Responsible authority	Typical EPP handling
Large (> 1,000 ha; > LAK 20 bn)	MAE — Department of Irrigation	Full EPP; DOI approval; NWMC coordination; often High/Extreme hazard
Medium / small (100–1,000 ha; LAK 5–20 bn)	Provincial Agriculture & Environment Office — Provincial Irrigation Section	Medium-form EPP; DOI approval; provincial coordination; often Significant hazard
Communal (< 100 ha; < LAK 5 bn)	District Agriculture & Environment Office — District/Municipality Irrigation Unit	Simplified one-page EPP; DOI approval; district + village front-line; often Low hazard

NOTE — hazard, not size, sets EPP depth; but size sets WHO acts

Hazard classification (Section 6) determines how DETAILED the EPP must be. The administrative scale above determines WHICH authority owns and operates it and who the front-line responders are. A small communal dam above a village can still be High hazard — in that case a District-level dam carries a full EPP. Do not let the size-based chain override the hazard-based content requirement.

14.5 2.5 A note on institutional names in transition

NOTE — read older names accordingly

Institutional names are mid-transition. The former Ministry of Energy and Mines (MEM) is now the Ministry of Industry and Commerce (MoIC) for hydropower functions. The former Ministry of Natural Resources and Environment (MoNRE) is now part of the Ministry of Agriculture and Environment (MAE), the lead ministry for irrigation. The draft Law on Irrigation text still reads "Ministry of Agriculture and FORESTRY" and "Agriculture and Forestry Office" — these should be read as the current MAE / Agriculture and Environment offices. This Framework uses the current names (MAE, DOI, MoIC) throughout; the companion Checklist does the same, correcting the "MAF" references in the Version 1.0 checklist.

15. 3. Owner Responsibility and Legal Framework

15.1 3.1 Primary Responsibility of the Dam Owner

In accordance with the World Bank Good Practice Note on Dam Safety (2020) and Lao national law, the dam owner bears primary responsibility for dam safety and emergency preparedness throughout the life of the dam. This includes:

- Preparing, maintaining, and exercising the EPP/EAP;
- Funding all EPP-related activities, including the DBA, inundation mapping, exercises, and community liaison;
- Ensuring all staff involved in dam operation are trained in EPP procedures;
- Reporting any emergency event to the relevant authorities as required;
- Engaging an Independent Panel of Experts for High and Extreme hazard dams;
- Retaining all EPP-related records for the life of the dam.

15.2 3.2 The Legal Gap — and How This Framework Addresses It

The most important issue for the binding force of this Framework is that the draft (amended) Law on Irrigation does not yet contain provisions for Dam Breach Analysis or Emergency Action Plans for irrigation dams. The Law on Dam Safety (2022) mandates EAPs only for dams classified as High or Extreme hazard. This Framework — correctly, per the WB Good Practice Note — extends the EPP obligation to dams of all sizes and all hazard levels. If the Framework relied only on cross-reference to the Law on Dam Safety, Low and Significant hazard irrigation dams would have no legal anchor.

RECOMMENDED LEGAL PATHWAY

Amend the Law on Irrigation to add a dedicated article (or cluster of articles) on EPP/EAP obligations for irrigation dams, rather than relying on cross-reference to the Law on Dam Safety. The amendment should, at minimum: (i) mandate an EPP/EAP for all irrigation dams regardless of size; (ii) assign preparation responsibility to the dam owner; (iii) designate MAE / Department of Irrigation as the approval authority; and (iv) cross-reference the DBA requirement. The Environmental Lawyer should determine whether Articles 46–49 of the draft Law on Irrigation provide a sufficient hook, or whether a standalone new article is preferable.

INTERIM MEASURE — pending legislative amendment

MAE should issue this Framework as a Ministerial Notification or Technical Directive, citing existing authority under the Law on Dam Safety (2022) and Decree No. 19/PM (2026). This gives the Framework administrative force during the period before the Law on Irrigation is amended.

15.3 3.3 Regulatory Approval Authority

For irrigation dams, the approval authority for the EPP is MAE / Department of Irrigation, stated unambiguously and consistently throughout this Framework. The owner prepares the EPP; the Department of Irrigation reviews and approves it. This is distinct from the coordination role of the NWMC.

NOTE — Approval vs. coordination: do not confuse the two

Regulatory approval of an irrigation dam EPP rests with MAE / Department of Irrigation. The NWMC, under Decree No. 19/PM (2026), is an inter-ministerial coordination body — it receives notification of serious emergencies and coordinates the multi-agency response, but it does NOT approve EPPs. Provincial and district officials should treat NWMC notification as a reporting/coordination obligation, never as a substitute for DOI approval.

Institutional-transition note: functions of the former Ministry of Energy and Mines (MEM) now sit with the Ministry of Industry and Commerce (MoIC) for hydropower; functions of the former Ministry of Natural Resources and Environment (MoNRE) now sit with the Ministry of Agriculture and Environment (MAE), which is the responsible ministry for irrigation dams. References to the older ministry names in earlier documents should be read accordingly.

CROSSWALK — this Framework is the irrigation analogue of the MEM/MoIC (Damwatch) ToR

The MEM/MoIC ToR governs HYDROPOWER EAPs: legal basis in the Electricity Law and LEPTS; technical assessment by DESM (and PDEM for ≤ 5 MW); final approval by the Department of Energy Business; preparation by a Chief Engineer registered with MEM. This Framework is the IRRIGATION counterpart and intentionally differs on all four points: legal basis in the (to-be-amended) Law on Irrigation and the Law on Dam Safety; review and approval by MAE / Department of Irrigation; preparation by the dam owner and a qualified engineer. Where the two regimes describe the SAME technical content — the four-step response process, the emergency levels, the DBA methodology, inundation mapping — this Framework is consistent with the ToR. Where they describe REGULATORY authority, this Framework follows the irrigation chain, not the hydropower chain. A hydropower dam remains under MoIC/DESM; an irrigation dam is under MAE/DOI.

15.4 3.4 Legal and Regulatory Requirements

Requirement	Source	Obligation
EPP/EAP mandatory	WB GPN (2020); this Framework; (proposed) amended Law on Irrigation	ALL irrigation dams, all sizes, all hazard levels
EPP/EAP approval	MAE / Department of Irrigation	Owner prepares; DOI reviews and approves
Serious-emergency notification	Decree No. 19/PM (2026) — NWMC	Level 3 and Level 4 emergencies (coordination, not approval)
EPP update every 5 years	MEM/Damwatch ToR for EAP	Minimum; and after any major change
EPP before first filling	Law on Dam Safety (2022), Art. 47; WB (12 months)	New dams — mandatory before first impoundment
Community awareness	WB EPP Framework (2021)	Annual minimum
Exercise programme	WB EPP Framework (2021)	Tabletop annual; functional 2-yearly; full-scale 3-yearly
Post-incident / after-action report	WB GPN (2020)	Within 30 days of any incident or exercise

16. 4. Required EPP Document Structure

An EPP for an irrigation dam in Lao PDR shall contain the sections below, with the level of detail proportional to the hazard classification. The structure follows the World Bank EPP Sample Framework (2021), Annex A, adapted for irrigation dams.

Section	Title	Required for
Section 1	Introduction, Purpose and Project Description	All hazard levels
Section 2	Main Features of the Dam	All hazard levels
Section 3	Roles and Responsibilities of Key Entities	All hazard levels
Section 4	Emergency Identification, Evaluation and Classification (4 levels)	All hazard levels
Section 5	Notification Procedures and Contact List	All hazard levels
Section 6	Preventive and Emergency Response Actions	All hazard levels
Section 7	Preparedness Activities	All hazard levels
Section 8	Termination and Documentation	All hazard levels
Section 9	Inundation Maps and Consequence Assessment	Significant / High / Extreme
Section 10	Community Liaison Programme	High / Extreme (recommended for Significant)
Section 11	EPP Review, Updating and Training	All hazard levels
Appendices A–L	Supporting information — detailed in Section 4.1 below	As applicable by hazard level

NOTE — Alignment with the WB sample table of contents

This structure maps directly onto Annex A of the WB EPP Sample Framework. Section 4 corresponds to the WB "Emergency Identification, Evaluation and Classification" section and carries the four-level classification described in Section 6 of this Framework. The Emergency Response Matrix (WB Annex C) is reproduced, adapted for irrigation dams, in Annex E of this Framework.

16.1 4.1 Appendices A–L — titles and content

The appendices hold the supporting information that makes the EPP operational. Each is prepared to the level of detail proportional to the dam's hazard classification. The "Required for" column states the minimum; owners may include any appendix voluntarily.

App.	Title	Brief content	Required for
A	Site plans, drawings & photographs	General arrangement plan; key structural drawings (dam, spillway, conduits, outlet); as-built drawings where available; site and downstream photographs.	All
B	Key dam parameters & reservoir data	Dam type, height, crest length; storage volume; Full Supply Level and design flood level; spillway and outlet capacities; reservoir area/volume–elevation curve.	All
C	Contact lists (internal & external)	Named persons and agencies with roles, work and after-hours numbers, and alternates — operator, owner, DOI, NWMC, province/district, village heads, Defence. Updated at least annually.	All
D	Inundation maps	Sunny-day and rainy-day dam-break maps, plus large-flood (no-failure) maps; flood extent, depth, velocity and flood-wave arrival times at each downstream community.	Significant / High / Extreme
E	Evacuation routes & assembly points	Marked routes and safe assembly areas for each downstream community; provisions for persons with mobility limitations; agreed with the EMA.	High / Extreme (rec. for Significant)
F	Reservoir drawdown procedures	Step-by-step bottom-outlet/gate operation to lower the reservoir; discharge capacity and limits; rate-of-drawdown limits; reservoir-level-vs-time plots for drawdown scenarios.	All
G	Forms & log sheets	Emergency incident log (date/time/action/initials); inspection and monitoring forms; notification record sheet; After-Action Report template.	All
H	Monitoring thresholds per level	Site-specific instrument thresholds keyed to the four emergency levels — seepage (l/min), turbidity (NTU), crest movement (mm/day), reservoir elevations, gate/conduit indicators.	All
I	Training & exercise records	Training plan and schedule; records of drills and exercises (date, participants, scenario); recommendations arising and their close-out.	All
J	Community engagement records	Records of annual community liaison (date, location, attendees, topics); language/comprehension confirmation for ethnic-minority communities; materials distributed.	High / Extreme (rec. for Significant)
K	Review, revision & distribution records	EPP revision history (version, date, reason); sign-off signatures; distribution list confirming who holds current copies.	All
L	After-Action Reports	Completed AARs from exercises and real incidents; cause, sequence, EPP effectiveness, corrective actions with responsible persons and deadlines, tracked to closure.	All (as events occur)

NOTE — appendix lettering and the companion Checklist

The appendix letters A–L here align with the "Appendices Present in the EPP" part of the companion Checklist. Appendices D, E and J are hazard-dependent; the remainder apply to all dams. Appendix H (monitoring thresholds per level) is the bridge between the Dam Safety Monitoring Manual (document 4 in the document system) and the EPP's emergency levels — it is where the trigger values that drive Levels 2–4 are recorded.

17. 5. Hazard Classification and Proportionate EPP Content

Every irrigation dam is assigned a hazard classification (Low, Significant, High, Extreme) on the basis of the downstream consequences of failure, not on dam size. The classification determines the required depth of the EPP and the tier of the companion Checklist.

NOTE — who assigns the hazard (dam risk) classification?

For HYDROPOWER dams the classification is well established: MoIC / Department of Energy (through DESM) assigns and certifies the dam risk classification under the Electricity Law and LEPTS (2018), using storage capacity, dam height and downstream population/economic risk. For IRRIGATION dams there is no equivalent designated authority. The Law on Dam Safety (2022) defines hazard categories but mandates EAPs only for High/Extreme dams; the draft Law on Irrigation is silent on who classifies. This gap must be closed before the classification-driven requirements of this Framework can be enforced: it should be resolved in the recommended amendment to the Law on Irrigation (Section 3.2) OR by a Ministerial Directive under the Law on Dam Safety, expressly assigning irrigation-dam hazard classification to MAE / Department of Irrigation (with independent-expert or Panel-of-Experts confirmation for High/Extreme dams). Until this is settled, each dam's classification should be proposed by the owner's qualified engineer and confirmed by DOI as an interim measure.

Hazard	EPP form / Checklist tier	DBA requirement	Inundation map
Low	Simplified one-page EPP; Checklist Tier 1	Qualitative downstream consequence assessment	Not required (recommended)
Significant	Medium-form EPP; Checklist Tier 2	DBA required if populated areas within 5 km	Required
High	Full EPP; Checklist Tier 3	DBA mandatory	Required (1:25,000 min.)
Extreme	Full EPP + PoE review; Checklist Tier 3	DBA mandatory with sensitivity analysis	Required (1:10,000 urban)

NOTE — The companion tiered Checklist

A Simplified EPP/EAP Checklist accompanies this Framework as the front-line operational tool. It is tiered: a one-page checklist for Low hazard dams, a medium form for Significant, and the full checklist for High/Extreme. It is calibrated to earthfill irrigation dams, including the piping-along-embedded-conduits failure mode. It is to be produced in Lao and English and piloted on 2–3 existing irrigation dams before finalisation.

18. 6. Emergency Level Classification — Four Levels

WHY FOUR LEVELS (and what changed from Version 1.0)

The World Bank EPP Sample Framework (2021) and the Nam Beng EAP both use four emergency levels. Version 1.0 of this Framework used three and omitted the "large flood discharge without failure" case — the situation where a spillway-passing flood, or a stuck / mis-operated irrigation or bottom-outlet gate, threatens downstream communities even though the dam itself has NOT failed. For irrigation dams this is a real and common danger. Version 2.0 restores it as Level 1. The four levels below align with WB Annex C and Nam Beng Alert Types 1–4.

MAPPING TO THE MEM / MoIC (Damwatch) ToR — four levels reconciled

The national MEM/MoIC ToR for hydropower EAPs (Damwatch, Rev 1) also uses four levels, but its Table 2 lists them in a different order (Internal/Non-Failure, then High Flow, then Potential Failure, then Imminent). This Framework keeps the World Bank / Nam Beng escalation order — Large Flood Discharge (L1), Internal Warning (L2), Potential Failure (L3), Imminent (L4) — because it forms a single monotonic severity ladder and matches the Nam Beng EAP's Alert Types 1–4. The two schemes map one-to-one on CONTENT; only the numbering differs. Each level below shows its MEM/MoIC ToR name so a reader familiar with the hydropower ToR can cross-reference directly. "High Flow" (ToR) = "Large Flood Discharge" (here); the other three names differ only in wording.

LEVEL 1 — LARGE FLOOD DISCHARGE (no dam failure) · MEM/MoIC ToR: "High Flow"

Definition. Flooding is occurring on the river system, or a large controlled/uncontrolled release is taking place, but there is no evident threat to the safety of the dam. Downstream areas may nonetheless be affected and must be warned.

Example triggers (not limited to):

- Reservoir passing a large flood over the spillway; downstream river approaching bank-full
- Irrigation conduit or bottom-outlet gate stuck open or mis-operated, causing an abnormally large release
- Spillway gate cannot be closed, or gate/hoist failure during a flood, with the dam otherwise sound
- Upstream dam release or natural flood forecast to raise downstream levels significantly

Response:

- Notify dam owner and Department of Irrigation, and downstream district authority, of the release and its expected downstream timing and magnitude
- Use a pre-prepared table correlating gate openings / reservoir level to downstream outflow and arrival times
- Issue advisory to downstream village heads where riverside areas may flood; no dam-failure evacuation required unless conditions escalate
- Continue monitoring; escalate if dam condition begins to deteriorate

LEVEL 2 — INTERNAL WARNING / WATCH · MEM/MoIC ToR: "Internal / Non-Failure"

Definition. An unusual condition has been detected at the dam that will not, by itself, cause failure but requires investigation and internal (and possibly external) notification.

Example triggers (not limited to):

- New or increased seepage at the downstream toe above the established alert threshold (l/min or turbid flow)
- Increased seepage, change in turbidity, or fine material appearing at a conduit outlet
- Abnormal settlement or minor cracking at a crest monitoring point
- Reservoir rising faster than forecast; any condition not previously observed indicating possible distress

Response:

- Increase monitoring frequency to daily or more; record all readings
- Notify dam owner and Department of Irrigation within 2 hours of detection
- Assess and document the condition (written note + photographs); check bottom-outlet gate/valve is operable
- Do not leave the dam unattended; confirm readiness of communications for possible escalation

LEVEL 3 — POTENTIAL FAILURE EMERGENCY · MEM/MoIC ToR: "Potential Failure"

Definition. Conditions are developing that could lead to dam failure. Time is likely available for analysis, decisions, and preventive action, but external notification and preparation for evacuation must begin now.

Example triggers (not limited to):

- Rapid or continuing increase in seepage beyond Level 2 threshold, especially if turbid
- Sand or soil particles observed in seepage at a conduit outlet or the downstream toe (evidence of piping)
- Significant cracking of crest or slopes; sinkhole or unusual deformation
- Reservoir rising above design flood level; spillway cannot control the flood; conduit blocked or failed, preventing drawdown

Response:

- Initiate reservoir drawdown using the bottom outlet immediately if feasible (Appendix on drawdown)
- Notify NWMC Secretariat, provincial and district authorities within 1 hour; notify EMA / Ministry of National Defence
- Issue warning to downstream communities; prepare for evacuation
- Dam owner and qualified engineer to be on site; report condition every 2 hours until controlled

LEVEL 4 — IMMINENT FAILURE (or failure occurring) · MEM/MoIC ToR: "Imminent"

Definition. Time has run out: the dam is about to fail, is failing, or has failed. Immediate downstream flooding is occurring or expected. Assume the worst case.

Example triggers (not limited to):

- Uncontrolled breach, or overtopping erosion of the embankment
- Rapid uncontrolled seepage causing visible erosion of the dam body
- Complete failure or collapse of a conduit causing erosion of the embankment
- Any Level 3 condition progressing rapidly toward failure

Response:

- ISSUE THE DOWNSTREAM WARNING IMMEDIATELY — activate all sirens, send messengers; do NOT wait for confirmation of failure
- Notify the NWMC Chairman directly within minutes; notify the Ministry of National Defence to activate rescue and relief
- Notify all downstream provincial and district authorities simultaneously; activate the evacuation plan per the inundation maps
- Do not attempt to stop the breach manually — prioritise evacuation over dam intervention

WB REQUIREMENT — warn first, confirm later (WB EPP Framework, 2021)

The decision to declare Level 4 and issue an evacuation warning must never be delayed pending confirmation of failure. If the operator or engineer assesses that failure is imminent, the warning is issued immediately. No higher authority is required to issue a Level 4 warning. The rule is: warn early, warn loudly.

19. 7. Notification Procedures and Contact List

19.1 6.1 Notification Flowchart

The EPP shall include a site-specific, one-page notification flowchart for each of the four emergency levels. Each flowchart shall show who is notified, in what priority order, by what primary and backup method, and within what maximum timeframe.

19.2 6.2 Mandatory Contacts and Timeframes

Contact	Organisation	Lvl 1	Lvl 2/3	Lvl 4	Method
Dam operator	Dam site	Immediate	Immediate	Immediate	Phone / radio
Dam owner	Project entity	1 hr	Immediate	Immediate	Phone
Dept. of Irrigation	MAE	2 hrs	1 hr	Immediate	Phone / official
NWMC Secretariat	Vientiane	Inform	1 hr	Immediate	Phone / official
Provincial authority	Province	Inform	1 hr	Immediate	Phone / radio
District authority	District	Inform	1 hr	Immediate	Phone / radio
Village heads (d/s)	Villages	Advisory	1 hr	Immediate	Phone / messenger / siren
Min. of Nat. Defence	National	—	Notify	Immediate	Phone / official

WB REQUIREMENT — contact lists (WB EPP Framework, 2021)

Contact lists shall include work numbers AND personal mobile numbers for all key persons, and shall be updated at least annually. If a named person leaves their post, the list shall be updated within 30 days. All persons named in the EPP shall be informed of their responsibilities.

19.3 6.3 Communication Methods

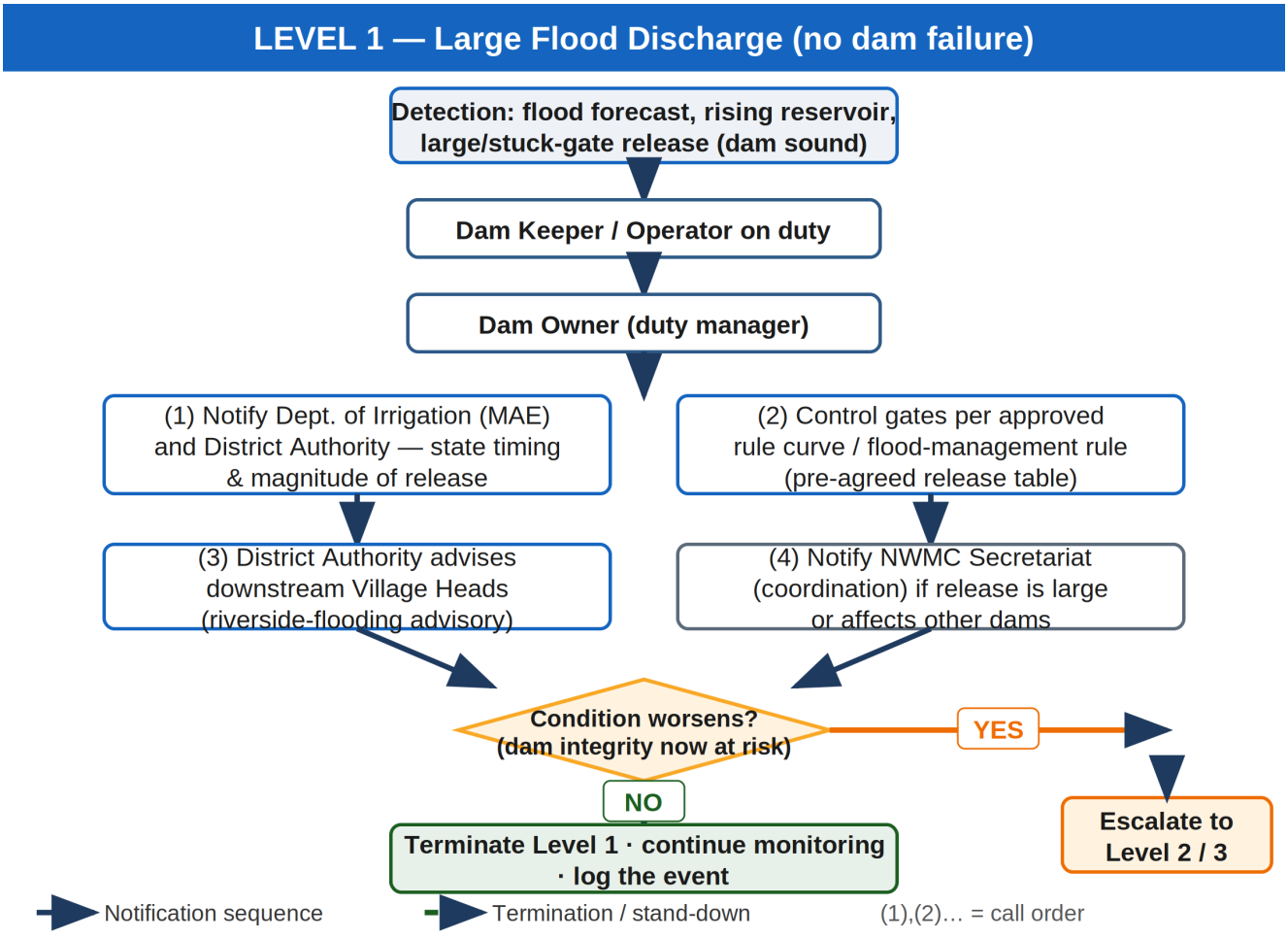
Primary and backup methods shall be identified for each contact, because telephone networks are often unreliable in a dam emergency:

- Primary: mobile telephone (direct dial)
- Backup 1: two-way radio (channel and callsign specified)
- Backup 2: messenger by vehicle or motorcycle
- Backup 3: warning siren (if installed)
- All methods tested during the annual exercise

19.4 6.4 Notification Flowcharts for the Four Alert Types

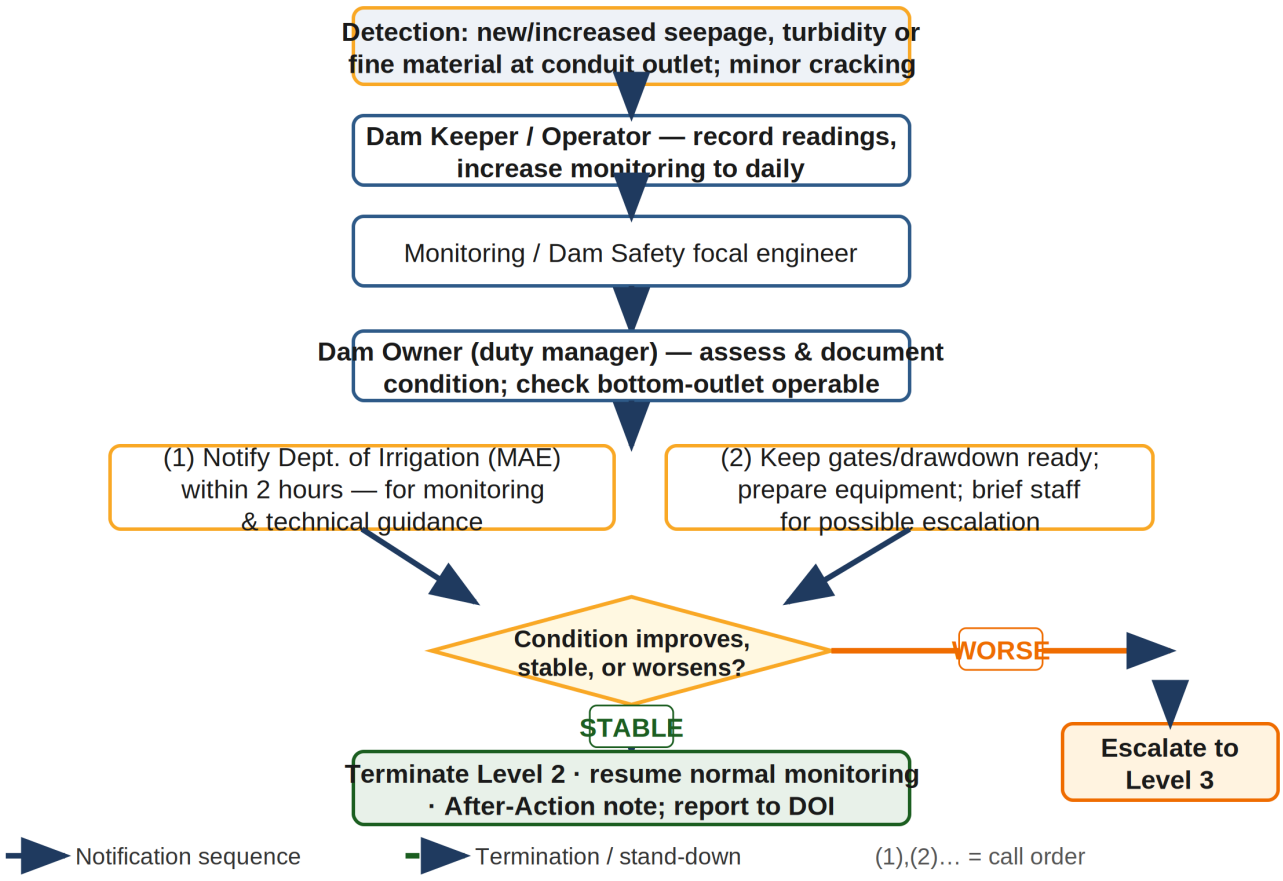
Each EPP shall include a one-page notification flowchart for each of the four emergency levels, following the structure of the Nam Beng EAP (Alert Types 1–4) but populated with the irrigation-dam roles and authorities of this Framework. The four templates below show the required flow: the internal escalation chain (keeper → owner), the evaluate-and-declare decision, the parallel external notifications (DOI, NWMC, provincial/district authorities, Defence), the downstream village-warning branch, and the termination / After-Action path. Dam owners replace the generic roles with named persons and phone numbers (work and after-hours), and add the call-sequence numbers shown.

> **NOTE — how these differ from the Nam Beng flowcharts**
>
> *The Nam Beng flowcharts route through MoIC/DEISM and the hydropower emergency-management chain (DEMA/PEMA/CEMA). These templates re-route through the irrigation chain: Department of Irrigation (MAE) as approver/technical authority, the NWMC Secretariat for coordination, and the provincial/district administrative authorities as the front-line EMA. The four-level structure, the call-sequence convention, the "evaluate and declare" decision point, and the village-speaker warning branch are retained from Nam Beng.*



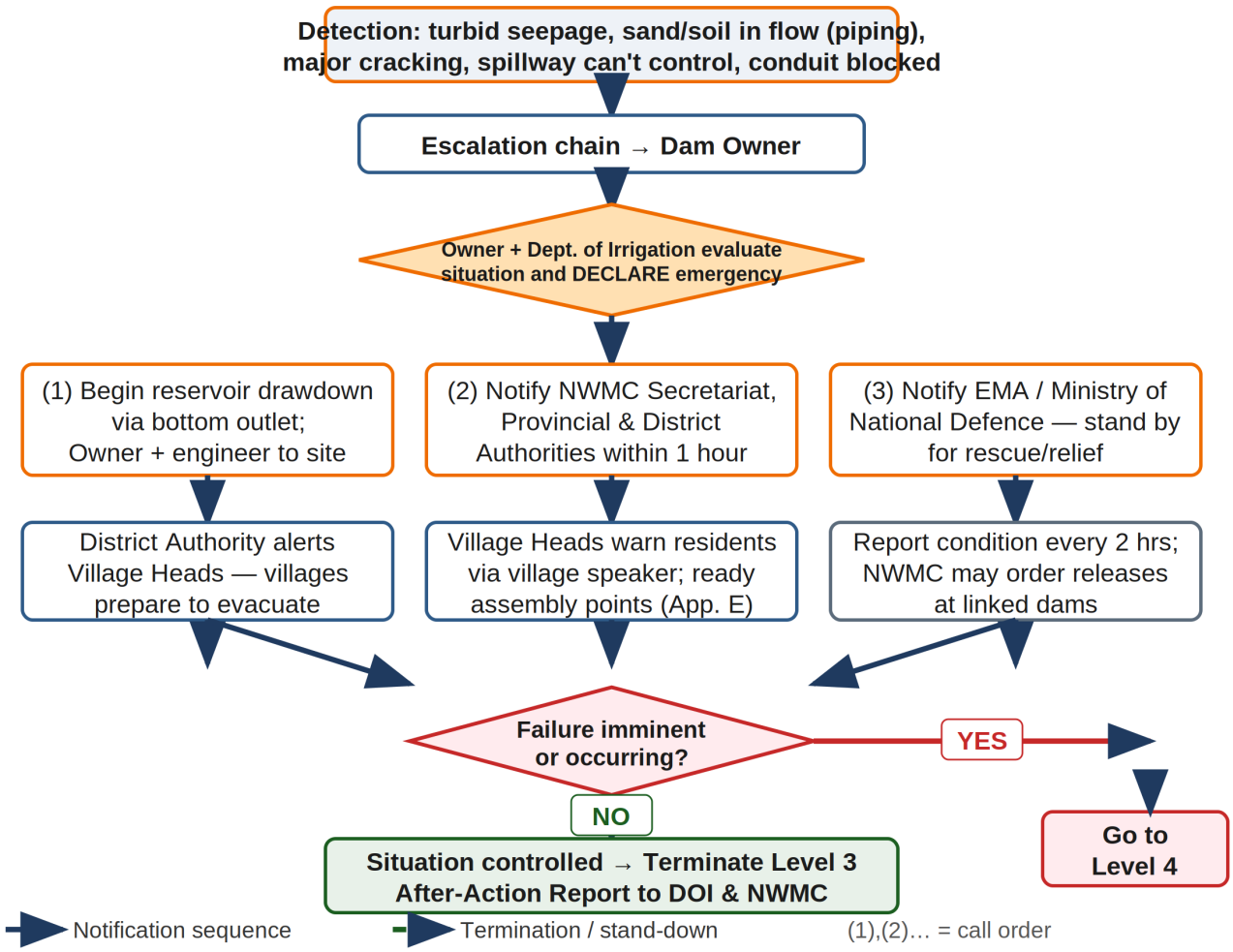
Flowchart 1 — Level 1: Large Flood Discharge (no dam failure). Yellow in the Nam Beng convention.

LEVEL 2 — Internal Warning / Watch

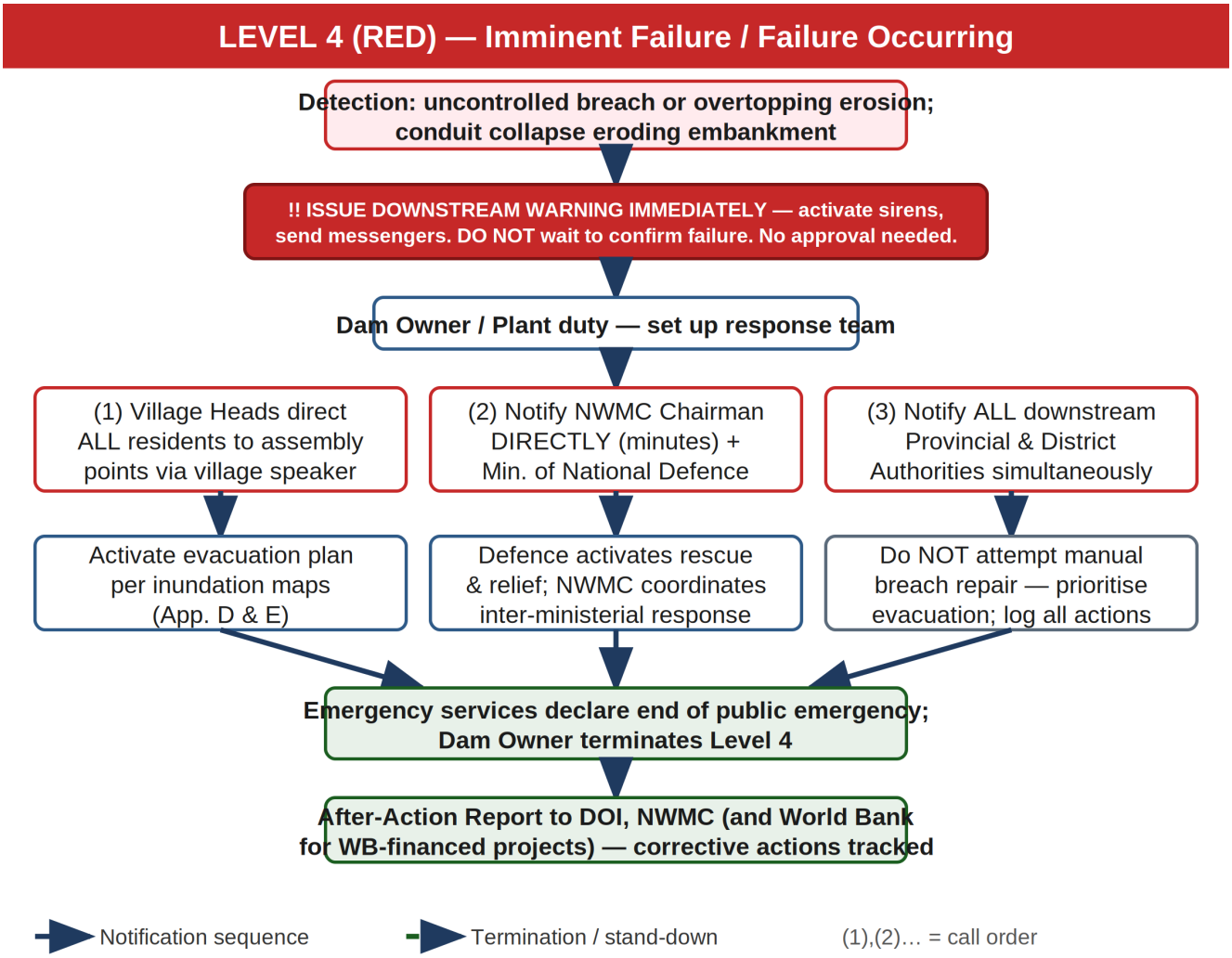


Flowchart 2 — Level 2: Internal Warning / Watch.

LEVEL 3 — Potential Failure Emergency



Flowchart 3 — Level 3: Potential Failure Emergency.



Flowchart 4 — Level 4: Imminent Failure / Failure Occurring. Red in the Nam Beng convention.

20. 8. Emergency Response Process and Actions

This section sets out the emergency response PROCESS — the sequence of steps followed once an unusual condition is detected — following the structure used in the Nam Beng EAP (Section 3, "Emergency Response Process") and the WB EPP Sample Framework ("EPP Response Process"). The WB note defines four steps; the Nam Beng EAP applies them through a detection–evaluation–classification table. This Framework adopts the same four-step process and the same table logic, but the indicators are calibrated to earthfill irrigation dams rather than to the concrete-dam indicators (block displacement, uplift, trunnion cracks) used at Nam Beng.

20.1 8.1 The four-step response process

Step	Stage	What happens
1	Detection, evaluation & classification	Operator/keeper detects an anomaly, records it, and — with the owner/engineer — classifies it to one of the four levels using the indicators in Section 8.2.
2	Notification	The relevant notification flowchart (Section 6.4) is executed for the classified level, in call-sequence order, with primary and backup methods.
3	Preventive & emergency actions	Pre-determined actions for the level are carried out — increased monitoring, reservoir drawdown, sandbagging/filters, warning and evacuation.
4	Termination & documentation	When the situation is resolved (public emergency ended by the emergency services), the level is terminated and an After-Action Report is prepared (Section 8.3).

20.2 8.2 Detection, evaluation and classification (earthfill irrigation dams)

The table below is the irrigation-dam counterpart to Nam Beng Table 3-3. It maps the observed condition to an emergency level. It is a MINIMUM set — each dam adds its own instrument thresholds (l/min, NTU, mm/day) in the EPP appendices. The observations come from the surveillance documents that feed the EPP within the dam safety document system — the Inspection Forms & Monitoring Data (document 6) and the Dam Safety Monitoring Manual (document 4) shown in Figure 2 (Section 1.5.2); the alert thresholds that trigger each level are held in Appendix H of the EPP.

Observation / distributing factor	Indication	Level
Spillway / river flow	Large flood passing spillway; river approaching bank-full; dam sound	**1 — Large discharge**
Irrigation / bottom-outlet gate	Gate stuck open or mis-operated, large release, dam sound	**1 — Large discharge**
Seepage at toe / conduit outlet	New or increased seepage above alert threshold; slight turbidity; stable	**2 — Internal warning**
Crest / slope	Minor settlement or hairline cracking; no movement trend	**2 — Internal warning**
Seepage with material transport	Turbid seepage carrying sand/soil (piping); flow increasing	**3 — Potential failure**
Conduit	Blockage or partial failure preventing drawdown; erosion at outlet	**3 — Potential failure**
Crest / slope	Significant active cracking, sinkhole, or accelerating deformation	**3 — Potential failure**
Reservoir vs. spillway	Rising above design flood level; spillway cannot control the flood	**3 — Potential failure**
Embankment	Uncontrolled breach; overtopping erosion; rapid muddy seepage eroding body	**4 — Imminent failure**
Conduit	Collapse of conduit eroding the surrounding embankment	**4 — Imminent failure**

Observation / distributing factor	Indication	Level

NOTE — why Nam Beng Table 3-3 was NOT copied

Nam Beng's classification table is built for a concrete gravity dam: relative block displacement, foundation uplift pressure, trunnion cracking, abutment collapse. These indicators do not exist for an earthfill embankment. Copying them would be worse than useless — it would send operators looking for the wrong warning signs. The table above keeps Nam Beng's four-level logic and its detection→classification purpose, with earthfill/conduit indicators (seepage, piping, cracking, overtopping) substituted throughout.

20.3 8.3 Preventive and emergency actions by level

For each level the EPP specifies pre-determined, numbered actions written so the operator can act without complex decisions under stress. The full step lists for each level are set out in Section 6 above; the EPP must make them site-specific (naming the actual gates, thresholds, routes, and persons).

20.4 8.4 Termination and post-incident documentation

1. Within 24 hours: prepare an Immediate Post-Incident Report and submit to DOI and (for Level 3/4) the NWMC.
2. Within 30 days: prepare a full After-Action Report documenting cause, sequence of events, effectiveness of the EPP response, and recommended improvements.
3. Within 60 days: update the EPP to incorporate lessons learned.
4. Notify the dam safety regulator of any dam safety incident per the Law on Dam Safety (2022).

WB REQUIREMENT — after-action reporting (WB GPN, 2020)

After-Action Reports are required for all Level 3 and Level 4 events and for all exercises. For WB-financed projects the report is submitted to the World Bank and to national authorities. Every recommendation is given a responsible party and a completion date, and is tracked until resolved. A one- to two-page template for Low and Significant hazard dams is provided in Annex G.

21. 9. Roles and Responsibilities

Role / Organisation	EPP responsibilities
Dam operator / keeper	Routine monitoring and visual inspection; identify and report anomalies; initiate Level 2 notification; operate bottom outlet and gates; maintain the incident log.
Dam owner / entity	Prepare, maintain and update the EPP; fund all EPP activities; train operators; activate Level 3 response; engage a qualified engineer; report to DOI and NWMC; run annual exercises; maintain community liaison.
Dept. of Irrigation (MAE)	Review and APPROVE the EPP (sole regulatory approval authority for irrigation dams); receive Level 1–3 notifications; provide technical guidance; require updates; conduct regulatory inspections.
NWMC Secretariat	COORDINATION role only — receive Level 3/4 notifications per Decree 19/PM; coordinate inter-ministerial response; maintain the national dam/EPP registry; brief the NWMC Chairman. Does NOT approve EPPs.
NWMC Chairman	Receive Level 4 notification directly; coordinate the national response; liaise with the Ministry of National Defence and Ministry of Home Affairs.
Provincial / district authorities (EMA)	Receive Level 2–4 notifications; activate district/village evacuation plans; coordinate rescue and relief; maintain downstream community contact lists; participate in exercises.
Village heads (d/s)	Receive warning from the owner or district authority; activate the village evacuation plan; direct residents to routes and assembly points; account for residents; join community exercises.
Ministry of National Defence	Receive Level 3/4 notification; provide rescue and relief resources; support evacuation; coordinate military/police assistance.
Independent Panel of Experts	(High/Extreme dams) Review the EPP and DBA at periodic safety reviews; provide independent recommendations to owner and regulator.

22. 10. Preparedness Activities

The EPP shall document the preparedness measures below (WB EPP Sample Framework, 2021):

22.1.1 10.1 Access to site

- Primary and alternative access routes; condition and wet-season passability; expected travel times; means (road, foot, boat) under different conditions.
- Response procedures where access is impaired at night, in adverse weather, or by road closures.

22.1.2 10.2 Communication and warning systems

- Internal and external systems, with robustness assessed; additional systems (trunked radio, satellite phone) where cellphone/landline are vulnerable.
- Downstream warning systems (siren, radio, SMS) and their activation procedure — including who decides to activate.

22.1.3 10.3 Alternative power supplies

- Location and operation of emergency power (portable generators, fuel) for gates, monitoring, and communications.

22.1.4 10.4 Emergency supplies, materials and support

- Location and availability of supplies and materials (rockfill, filter, drainage, sandbags); list of local contractors that can be mobilised; list of technical support personnel with contacts.

22.1.5 10.5 Minimum emergency equipment

Equipment	Qty	Location	Checked
Two-way radio (charged)	Min. 2	Operator office	
Portable generator	1	Dam site / control room	
Emergency lighting	As required	Control room / conduit access	
Manual gate/valve operating gear	Per gate type	Gate house	
First aid kit	1	Operator office	
EPP (laminated copy)	Min. 3	Operator, owner, DOI	
Incident logbook	1	Operator office	
Emergency vehicle / motorcycle	1	Dam site	

23. 11. Dam Breach Analysis, Inundation Maps and Consequence Assessment

23.1 11.1 DBA requirements by hazard level

Hazard	DBA requirement	Inundation map	Tier
Low	Qualitative downstream consequence assessment	Not required (recommended)	Simplified (Tier 1 optional)
Significant	DBA recommended; required if populated areas within 5 km	Required	Tier 1 min; Tier 2 recommended
High	DBA mandatory	Required (1:25,000 min.)	Tier 2 minimum
Extreme	DBA mandatory with sensitivity analysis	Required (1:10,000 urban)	Tier 3

23.2 11.2 Mandatory failure scenarios

- Scenario 1 — Sunny-day failure: breach at Full Supply Level, fair weather (typically seismic).
- Scenario 2 — Rainy-day failure: breach during the Inflow Design Flood at peak reservoir level, with concurrent natural flooding considered.
- Scenario 3 — Piping / internal erosion along embedded conduits: mandatory for ALL earthfill dams with embedded conduits (the dominant failure mode for earthfill irrigation dams).
- Large-release (no-failure) case: downstream inundation from a large flood passing the spillway or from a stuck gate — supports the Level 1 notification track.

23.3 11.3 Using DBA results in the EPP

- Flood-wave travel times → set the maximum notification timeframes (Section 7).
- Inundation extents → define evacuation areas and zones (Section 10 / maps).
- Peak depths and velocities → identify at-risk infrastructure and critical facilities.
- Verify: does the Level 4 notification chain give communities enough lead time to evacuate before the flood wave arrives?

WB REQUIREMENT — inundation maps and lead time (WB, 2020)

Inundation maps shall clearly show flood-wave arrival times so that notification lead times in the EPP can be determined. The Level 4 notification sequence shall be designed so that communities receive warning before the flood wave arrives. Maps shall carry standard cartographic elements and, where required, evacuation routes and assembly points.

NOTE — DBA-to-EPP worked example needed

Most DOI engineers will need a worked example to translate DBA outputs into notification timeframes and inundation maps for a representative small/medium earthfill irrigation dam. This is the most common implementation gap in the region and should be produced with the O&M guidelines (see Section 14). The Nam Beng EAP provides a usable methodological model (2-D HEC-RAS; Froehlich/Xu–Zhang breach parameters; per-village flood-arrival-time tables), noting that Nam Beng is a concrete hydropower dam — the irrigation worked example must use an earthfill dam with embedded conduits.

23.4 11.4 Consequence assessment (people at risk and potential loss of life)

Detailed inundation maps — flooded area, depth, velocity, and peak arrival time — are the basis for the consequence assessment that drives the EPP's ambition. For Significant, High and Extreme hazard dams the consequence assessment shall estimate:

- **People at risk (PAR):** the population within the mapped inundation zone for each failure scenario, by community.
- **Potential loss of life (PLL):** estimated from PAR, flood severity (depth × velocity), and available warning time — the warning time coming directly from the flood-wave arrival times and the notification chain.
- **Affected assets:** houses, commercial buildings, schools/clinics, roads and bridges, and other critical infrastructure within the zone.

The PLL estimate is what justifies the hazard classification and the depth of the EPP; a High or Extreme classification with a low estimated PLL, or vice-versa, is a signal to re-check either the classification or the analysis.

23.5 11.5 Large-flood (no-failure) inundation maps

> **WB REQUIREMENT — map the large release, not only the breach (WB, 2021)**
>
> *In addition to the sunny-day and rainy-day breach maps, downstream inundation maps shall be prepared for large flood releases that do NOT cause dam failure — typically in the 200- to 1,000-year return-period range — where a large controlled or uncontrolled release, or a spillway-passing flood, would inundate downstream residential and commercial areas. These maps support the Level 1 notification track (Section 6) and let authorities warn communities of a dangerous release even when the dam is sound.*

24. 12. Community Liaison Programme

The dam owner is responsible for ensuring downstream communities are aware of the dam, the consequences of failure or a large release, the warning system, and the evacuation procedures. Community liaison is not optional — it is a fundamental component of the EPP.

> **WB REQUIREMENT — community liaison (WB EPP Framework, 2021)**
>
> *Community awareness and liaison are essential elements of emergency preparedness. The dam owner shall engage downstream community leaders annually and shall not rely solely on district or provincial authorities to relay information to communities. Communities must know what the warning signals mean, where to go, and how to get there.*

24.1 12.1 Requirements

- Annual meeting with the leaders of all downstream communities within the inundation zone.
- Annual distribution of simplified EPP materials in the appropriate language(s) (see 11.2).
- Content: what the dam is; what could happen in a failure or large release; warning signals; evacuation routes; assembly points; what to do and not do.
- Confirmation of evacuation routes and assembly points with community leaders each year.
- Invitation to community leaders to join the annual tabletop exercise.
- All meetings documented (date, location, attendees, topics) and kept as an EPP appendix.

24.2 12.2 Ethnic-minority and multilingual communities

> **STRENGTHENED REQUIREMENT (WB review, July 2026)**
>
> *Many irrigation areas in Lao PDR include ethnic-minority and non-Lao-speaking communities. The dam owner shall ACTIVELY ASSESS the language needs of each downstream community during the liaison process — not merely note local dialects as an option. Where a community does not function primarily in Lao, warning materials and at least one liaison channel (e.g. a local-language messenger or community leader) shall be provided in the language that community actually uses, and comprehension shall be confirmed, not assumed.*

24.3 12.3 Warning signals

- Siren (if installed): specify the blasts/duration for each level.
- Messenger: define the verbal message to village heads.
- Radio / SMS (if applicable): specify station, template.
- Signals confirmed with village leaders and practised in exercises.

25. 13. Training and Exercise Programme

25.1 13.1 Training

- Initial EPP training for all new operating staff before duties commence; annual refresher for all staff.
- Coverage: emergency-level recognition, notification, drawdown operations, incident-log keeping.
- Records: names, dates, topics, trainer.

25.2 13.2 Exercise schedule

Exercise	Frequency	Participants	Output
Tabletop	Annual (min.)	Dam owner, operator, district authority, village heads (national participants NOT required)	After-Action Report ≤ 30 days
Functional	Every 2 years	Tabletop participants + provincial authority + DOI	AAR; update EPP if needed
Full-scale (incl. community evacuation drill)	Every 3 years	Functional participants + downstream communities + EMA/NWMC as available	AAR; update EPP; update community records

NOTE — minimum-cost exercise formats (WB review, July 2026)

Most irrigation dam owners are government agencies, cooperatives, or small entities with limited resources, and there are hundreds of irrigation dams. The annual tabletop is NOT required to involve national-level participants: for a Low or Significant hazard dam it may be run as a half-day session at the district office with the dam operator and village heads. NWMC participation is expected only for the 3-yearly full-scale exercise, and only as available. A one-to two-page After-Action Report template (Annex G) applies to Low and Significant hazard dams to keep compliance realistic.

NOTE — relationship to the MEM / MoIC ToR exercise frequency

The MEM/MoIC (Damwatch) ToR sets a lower baseline for hydropower dams: a classroom exercise every 1–3 years, and a practical exercise every 5 years for High/Extreme dams. The schedule above (annual tabletop, 2-yearly functional, 3-yearly full-scale) is deliberately MORE frequent, because irrigation-dam operators typically have less standing dam-safety capacity than hydropower Project Companies and benefit from more regular practice. Where an owner genuinely cannot meet the annual cadence, the ToR baseline (classroom 1–3 yr; practical 5-yr for High/Extreme) is the floor below which no irrigation dam should fall.

WB REQUIREMENT — debrief and after-action report (WB EPP Framework, 2021)

Each exercise includes an immediate debrief and a written After-Action Report within 30 days, documenting what was tested, what worked, what did not, lessons learned, recommended improvements, responsible persons, and completion dates. Findings are tracked until resolved.

26. 14. Implementation: Supplementary Products and Sequencing

This Framework is the governing document. It is made operational by the supplementary products below, to be prepared in the following order (WB review, July 2026):

Order	Product	Why this order
1	Simplified EPP/EAP Checklist (tiered, bilingual, piloted)	Unlocks immediate practical utility — a dam keeper or district official can use it directly. Companion to this Framework.
2	O&M Safety Guidelines (with DBA-to-EPP worked examples embedded)	A large share of irrigation-dam incidents stem from inadequate O&M and missed early-warning signs; these feed the Level-2 trigger conditions. Worked DBA example lives here.
3	Design and construction guidelines	Longer-term; require more technical development time.

26.1 14.1 Recommended scope for a specialist consultant (e.g. Damwatch)

- Develop the tiered Simplified EPP/EAP Checklist and the DBA-to-EPP worked examples.
- Pilot-test the Framework and Checklist on 2–3 existing irrigation dams of different hazard classes.
- Provide capacity-building for DOI and provincial engineers on Tier 1/2 breach analysis for small earthfill dams.

27. 15. EPP Document Control

27.1 15.1 Distribution

Recipient	Copies	Format
Dam operator (site copy)	1 original + 1 laminated key-pages	Hard copy
Dam owner / entity	1	Hard + electronic
Department of Irrigation (MAE)	1	Hard + electronic
NWMC Secretariat	1	Electronic
Provincial authority (each affected)	1 per province	Hard + electronic
District authority (each affected)	1 per district	Hard copy
Village head (each affected d/s)	1-page simplified summary	Hard copy, local language

27.2 15.2 Review and update

- Full review and update at least every 5 years.
- Partial update on: change in dam condition or hazard class; change in downstream land use; change in key contacts; after any Level 3 or Level 4 event; after any exercise with significant findings.
- Annual contact-list review — mandatory.
- All updates re-approved by DOI and redistributed.

28. Annex A — Sample EPP Table of Contents

The following sample TOC (adapted from WB EPP Sample Framework, Annex A) may be used directly by dam owners:

- 1. Introduction
- 2. Purpose and Scope of the EPP
- 3. Main Features of the Dam
- 4. Roles and Responsibilities of Key Entities
- 5. Emergency Identification, Evaluation and Classification (Levels 1–4)
- 6. Notification Procedures and Contact List
- 7. Preventive and Emergency Actions
- 8. Preparedness Activities
- 9. Termination and Documentation
- 10. EPP Review, Updating and Training
- 11. Dam Break Analysis, Inundation Mapping and Consequence Assessment
- Appendices A–L (site plans, contact list, drawdown, inundation maps, evacuation routes, forms/logs, monitoring thresholds, training records, community records, after-action reports, review/distribution records)

29. Annex E — Emergency Response Matrix (Sample, irrigation dams)

Full six-event-type matrix reproduced from WB EPP Sample Framework, Annex C, calibrated to earthfill irrigation dams. Each cell gives the indication that prompts the response level for that event type. The matrix is to be made dam-specific (actual elevations, instrument thresholds, l/min and NTU values). Read DOWN a column to see how one event type escalates across the four levels; read ACROSS a row to see what each level looks like across event types.

NOTE — the earthquake column is site-dependent

Seismic hazard in Lao PDR is not uniform: it is appreciable in the northwest (near the active fault systems of Bokeo, Luang Namtha, Xayaboury and parts of Luang Prabang) and low in the south. Complete the earthquake column according to the dam's seismic zone; a low-seismic-hazard dam may mark it N/A with a stated justification. Do not delete the column from the template — the classification, not the template, decides.

Level	Reservoir / flood	Earthquake (site-dep.)	Seepage / piping	Abnormal instrument	Gate / conduit / power	Accident / sabotage
1 — Large discharge	At spillway sill; discharging; d/s near bank-full — inform districts	Felt quake below design level; engineer to inspect	— (dam sound)	Early-warning instruments within normal range	Gate stuck open / mis-operated → large release; dam sound	Minor incident/threat; security responds; authorities informed
2 — Internal warning	Rising faster than forecast; ~100-yr inflow anticipated	Quake above design level; inspect; drawdown may be needed	New/increased seepage above threshold; slight turbidity; stable	Persistent abnormal readings; external notice	Gate malfunction; repair > 3 days → external notice	Embankment/spillway damaged (accident/sabotage); alert
3 — Potential failure	Above design flood; spillway can't control; ~1,000-yr → prep evac.	Slope instability after quake → prep evacuation	Turbid seepage w/ sand/soil (piping); increasing → prep evac.	Instruments signal release threat → prep evacuation	Conduit blocked/failed; drawdown impaired → prep evac.	Damage impairs control at high reservoir → prep evac.
4 — Imminent failure	At/over crest; uncontrollable → order evacuation	Quake damage; can't retain water → order evacuation	Rapid muddy seepage; erosion → order evacuation	Reservoir uncontrollable → order evacuation	Conduit collapse eroding embankment → order evacuation	Reservoir uncontrollable → order evacuation

30. Annex F — Early Identification of Emergency Conditions (embankment dams)

Reproduced from WB EPP Sample Framework, Annex B ("Potentially Observed Anomalies, Causes and Required Actions"). This table is already written for embankment dams, so it applies to earthfill irrigation dams with almost no change; conduit-specific rows have been added at the end. Dam operating staff should use it as the surveillance checklist for recognising the tell-tale signs of the principal failure modes.

Potentially observed anomaly	Potential cause and required action
New seepage area, increased flow from an existing seepage or wet area, or anomalous increase in a monitored drain flow	New or increased seepage at the toe, abutments, downstream slope, or downstream of the dam may indicate initiation of a seepage-related failure mode. Institute close monitoring and investigate promptly.
Evidence of material transport by seepage flow	Direct indication of possible internal erosion / piping. Small constant sediment may mean the failure mode is initiating; rapidly increasing muddy seepage is very serious and failure may be imminent — notify and take emergency action (e.g. reservoir drawdown) immediately.
Anomalous water-pressure (piezometer) data	Readings inconsistent with historical performance may indicate changed seepage conditions in dam or foundation — investigate promptly, especially if occurring with other seepage changes.
Sinkholes, or unusual embankment settlement or deformation	May result from subsurface removal of embankment/foundation material by seepage. Take seriously and investigate quickly.
Transverse crack (upstream–downstream)	Warrants increased attentiveness to a possible seepage-related failure mode. Monitor seepage and foundation pressures closely, particularly during reservoir filling above current level.
Longitudinal crack (parallel to dam axis)	May indicate sliding instability (serious) or differential settlement. Monitor closely for several days to confirm no continuing movement.
Conduit outlet: turbidity or fine material in flow	Added for irrigation dams. Soil migration into the conduit or along its exterior indicates piping along the conduit — the dominant earthfill-irrigation failure mode. Escalate per Section 6 and inspect the conduit–embankment interface.
Sinkhole or wet area along the conduit alignment	Added for irrigation dams. Depression or wet spot on the crest/downstream slope tracing the conduit line indicates internal erosion along the conduit. Investigate immediately.
Spillway concrete: cracking, spalling, joint opening, undermining	Added for irrigation dams. Deterioration of the concrete spillway or stilling basin can lead to loss of discharge capacity or structural failure — inspect and record against thresholds (see companion Checklist, Part D).

31. Annex G — After-Action Report Template (Low / Significant hazard, 1–2 pages)

Field	Entry
Dam name / owner	
Event or exercise; date	
Emergency level reached	
What was tested / what occurred	
What worked well	
What did not work	
Lessons learned	
Recommended improvement	
Responsible person	
Completion date	
Status (open/closed)	
Prepared by / date	

32. Annex H — Companion Documents

- Simplified EPP/EAP Checklist for Irrigation Dams (tiered), Version 2.0 — the front-line operational tool; tiered by hazard level; to be issued in Lao and English and piloted before finalisation.
- O&M Safety Guidelines (to be prepared) — with embedded DBA-to-EPP worked example for an earthfill irrigation dam.
- Design and Construction Guidelines (to be prepared).

32.1 Annex 5 – Operation and Maintenance Plan (O&MP) Outline

Purpose and use. This outline sets the **minimum content of the site-specific O&MPs** to be prepared for each of the three Project dams, in line with ESS4 Annex 1, the World Bank Good Practice Note on Dam Safety and the Dam Safety Law No. 52/NA (2022). It is prepared at appraisal as the basis for the full, dam-specific O&MPs. The full O&MPs will be prepared during implementation, using this outline and the final rehabilitation designs. Each O&MP will be reviewed by the PoE and cleared by the World Bank. The scope and level of detail of each plan will be proportionate to the risk classification and the rehabilitation works of the dam concerned.

1. Introduction and dam description. Purpose, scope and legal basis of the plan. A dam data sheet covering the main dimensions, reservoir, spillway, outlet works, hydromechanical equipment, irrigation system served, risk classification and downstream setting, together with a description of the rehabilitated works.

2. O&M organization and responsibilities. The dam owner and operator, the dam safety function and the chain of command, including 24-hour contact arrangements. The roles of the responsible government agencies, Irrigation Service Centers and Water User Groups. The dam owner and operator are to be confirmed in each O&MP. For high-risk dams, a dam safety assurance function that is independent of routine operation should be established or retained, as the GPN advises.

3. Staffing, skills and training. Required positions, qualifications and shift arrangements, together with training needs, refresher training and the participation of women in dam operation and maintenance.

4. Reservoir and gate operation. Operating rules for normal, flood and dry-season conditions. Operating procedures for spillways, gates and other hydromechanical equipment. Limits for reservoir drawdown, downstream notification and warning procedures, and consistency with the Water Allocation Plan.

5. Inspection, surveillance and monitoring. Routine, periodic and special inspections (including after major floods) with checklists and frequencies. Use of the monitoring data from the Instrumentation Plan, alert and action thresholds, periodic dam safety reviews and reporting procedures.

6. Maintenance programme. Preventive and corrective maintenance of the embankment, spillway, hydromechanical and electrical equipment, outlet works, canals and access roads. Vegetation control, sediment management, spare parts, and maintenance records.

7. Emergency arrangements. The link to the dam-specific EPP, the conditions that trigger it, and the contact points for emergency response.

8. Environmental and social aspects of operation. Environmental flow releases, water quality, community and fishing access to the reservoir, safety signage and advance notice of operational changes, and the grievance channel for operation-related concerns.

9. Budget and funding. The annual O&M cost estimate, funding sources and any water user fee arrangements, and the costs of long-term maintenance and safety inspections.

10. Records, reporting and review. Logbooks and an annual O&M report, reporting to the PMU and the World Bank, and the conditions that trigger an update of the plan (design changes, incidents or updated hydrological information). The plan is also reviewed periodically, at an interval to be set in each O&MP.

11. Appendices. Operating manuals for gates and equipment, inspection forms, contact lists, as-built drawings and reservoir operating rules.

32.2 Annex 6 – Guidance for Preparation of Biodiversity Management Plan (BMP)

This Annex provides guidance for the preparation of a **Biodiversity Management Plan (BMP)** for WISER subprojects where the environmental and social screening or ESIA identifies significant risks and impacts on biodiversity, natural habitats, critical habitats, protected areas, or other ecologically sensitive areas.

The BMP shall be prepared in accordance with the **World Bank Environmental and Social Standard 6 (ESS6): Biodiversity Conservation and Sustainable Management of Living Natural Resources**, its Guidance Note, applicable national legislation of the Lao PDR, and Good International Industry Practice (GIIP).

Where the screening or ESIA identifies the potential presence of **critical habitats**, **protected areas**, **Key Biodiversity Areas (KBAs)**, **important wetlands**, **natural forests**, **aquatic ecosystems**, **ecologically sensitive river reaches**, or **threatened species**, additional biodiversity surveys and specialist assessments shall be undertaken, as appropriate, to support preparation of the BMP.

The BMP shall be proportionate to the nature, scale, and significance of the identified biodiversity risks and impacts and shall include, at a minimum, the following:

A. Biodiversity Objectives

Define clear biodiversity management objectives based on the findings of the environmental and social screening, ESIA, biodiversity surveys, and other relevant studies. The objectives shall apply the mitigation hierarchy (avoid, minimize, restore, and offset where appropriate) and seek to achieve **No Net Loss** of natural habitats and, where applicable, **Net Gain** of critical habitats, consistent with ESS6.

B. Baseline Biodiversity Conditions

Summarize the existing biodiversity conditions within the Project area, including:

- Habitat types and ecological features;
- Flora and fauna;
- Aquatic biodiversity and fisheries;
- Protected areas and Key Biodiversity Areas;
- Critical habitats and ecosystem services;
- IUCN Red List and nationally protected species; and
- Seasonal ecological characteristics relevant to Project activities.

C. Biodiversity Risks, Impacts and Mitigation Measures

Identify potential Project impacts on biodiversity during the design, construction, operation, and maintenance phases and define appropriate mitigation measures, including:

- Avoidance of sensitive habitats;
- Protection of aquatic ecosystems and environmental flows;
- Vegetation clearing controls;
- Erosion and sediment control;
- Pollution prevention;
- Rehabilitation of disturbed areas;
- Invasive species management;
- Wildlife protection measures; and
- Restoration and enhancement measures, where required.

D. Biodiversity Management Requirements

Specify environmental requirements applicable to Contractors, Project workers, and other implementing agencies, including prohibitions on:

- Hunting, fishing, trapping, or collection of wildlife;
- Collection of timber and non-timber forest products;
- Clearing vegetation outside approved work areas;
- Off-road vehicle movement;
- Open burning;
- Introduction of invasive species; and
- Possession or use of firearms.

Where appropriate, include seasonal restrictions to avoid disturbance during breeding, nesting, migration, spawning, or other ecologically sensitive periods.

E. Biodiversity Monitoring Programme

Define monitoring indicators, monitoring locations, methods, frequency, responsibilities, reporting requirements, and adaptive management measures to evaluate the effectiveness of biodiversity mitigation measures.

F. Institutional Responsibilities

Define the roles and responsibilities of the PMU, E&S Consultant (Firm), FS & DED Consultant, ISWS, Contractors, relevant government agencies, local authorities, and communities in implementing, supervising, monitoring, and reporting on the BMP.

G. Capacity Building

Identify any biodiversity training and awareness activities required for Contractors, ISWS, Project staff, and local communities.

H. Implementation Schedule

Provide an implementation schedule aligned with the Project design, construction, operation, and maintenance phases.

I. Budget

Provide detailed cost estimates and identify funding sources for implementation, monitoring, reporting, training, and adaptive management measures under the BMP.

32.3 Annex 7 – Cultural Heritage Management Plan and Chance Find Procedure

Part A – Cultural Heritage Management Plan (CHMP)

The WISER Project is not expected to cause significant adverse impacts on known archaeological, historical, religious, or cultural heritage resources. Nevertheless, rehabilitation works may be undertaken in areas where cultural heritage resources, sacred sites, temples, cemeteries, monuments, archaeological remains, or other tangible and intangible cultural heritage may occur.

In accordance with **World Bank ESS8 (Cultural Heritage)** and applicable laws and regulations of the Lao PDR, potential impacts on cultural heritage shall be identified during the environmental and social screening and ESIA process. Where cultural heritage risks are identified, appropriate **Cultural Heritage Management** Plan **(CHMP)** shall be incorporated into the site-specific **ESMP** and **Contractor's ESMP (C-ESMP)**.

The CHMP shall include, as appropriate:

- identification and mapping of known cultural heritage resources within the Project area;
- measures to avoid or minimize impacts through project siting, design, and construction methods;
- consultation and coordination with the Ministry of Information, Culture and Tourism (MICT), Provincial Information, Culture and Tourism Offices, local authorities, and affected communities;
- protection of temples, cemeteries, sacred forests, monuments, historical sites, and other culturally significant places;
- access management where works are undertaken near cultural heritage sites;
- worker awareness and training on cultural heritage protection requirements;
- implementation of the Chance Find Procedure (Part B);
- monitoring and reporting of cultural heritage management measures; and
- institutional responsibilities for implementation, supervision, and reporting.

Where rehabilitation works are undertaken near recognized cultural heritage sites, additional mitigation measures may be required in consultation with the relevant authorities.

Part B. Chance Find Procedure

Cultural heritage encompasses both tangible and intangible heritage valued at local, regional, national, or global levels.

- **Tangible cultural heritage** includes movable or immovable objects, sites, structures, groups of structures, natural features, and landscapes of archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. These may be found in urban or rural settings, above or below ground, or underwater.
- **Intangible cultural heritage** includes practices, representations, expressions, knowledge, skills, instruments, artefacts, and cultural spaces that communities recognize as part of their heritage and transmit across generations.

1. Procedure in Case of Chance Finds

If sites, resources, or artifacts of cultural value are encountered during construction, the following procedures in Table A-4 will apply. These are consistent with **World Bank ESS8 (Cultural Heritage)**, the **Lao PDR Law on National Heritage, No. 11/NA (2021)**, and relevant regulations of the **Ministry of Information, Culture and Tourism (MICT)** and its **Department of Heritage**:

Table A-4 Procedures in Case **of Chance Finds**

Step	Procedure
1. Immediate Suspension of Works	• Construction activities in the chance find area must stop immediately.
2. Securing the Site	• The Contractor/PIU will secure the site to prevent further disturbance, damage, or theft. • If removable antiquities or sensitive remains are uncovered, temporary guarding shall be arranged until local authorities take over.
3. Notification	• The Contractor will notify the PIU and the Implementation Support and Works Supervision Consultant (ISWS). • The PIU will inform the Department of Heritage, MICT, and the Provincial Information, Culture and Tourism Department (PICT), as required by law.
4. Local Authority Response	• The Provincial Information, Culture and Tourism Department (PICT) will register and assess the find, and immediately report to the Department of Heritage, MICT.
5. National Authority Response	• The Department of Heritage, MICT will conduct or assign experts for evaluation and inspection of the find's cultural significance.
6. Determination and Guidance	• If the find is **not of cultural heritage value**, MICT will authorize resumption of works. • If the find is of **cultural heritage value**, MICT will provide instructions on treatment, conservation, or relocation, with technical support as needed. Costs for such treatment will be borne by the project.
7. Documentation	• All chance finds and subsequent actions must be fully documented by the Contractor, ISWS, and PIU, and included in monthly safeguards monitoring reports.

2. Institutional Responsibilities

- **Contractor**: Stop work, secure site, notify PIU/ISWS.
- **ISWS & PIU**: Ensure compliance, report to PICT and Department of Heritage.
- **PICT**: Immediate registration and coordination with Department of Heritage.
- **Department of Heritage, MICT**: Final authority for evaluation, treatment, and decision on resumption of works.

3. Integration into Contracts

This procedure shall be included in:

- Bidding Documents (BDs)
- Construction contracts (C-ESMP requirements)
- Supervision Consultant contracts

32.4 Annex 8 – UXO Risk Management Procedures

A. Purpose

This annex provides procedures for identifying, assessing, and managing risks related to Unexploded Ordnance (UXO) in project areas.

The objective is to ensure that all project activities are implemented safely and that no civil works commence in areas with UXO risks until appropriate survey and clearance have been completed.

B. Background

UXO contamination remains present in many areas of Lao PDR, particularly in locations involving past conflict and in areas requiring excavation or earthworks.

Project activities involving excavation, construction, or ground disturbance may pose safety risks if UXO is present. Therefore, UXO risk assessment and clearance are essential prior to commencement of works.

C. General Requirements

- All project activities shall assess UXO risks during the E&S screening stage;
- No civil works shall commence in areas identified as UXO risk areas until survey and clearance are completed;
- UXO survey and clearance shall be conducted by authorized organizations; and
- UXO clearance shall be certified by the National Regulatory Authority (NRA).

D. UXO Risk Screening and Assessment

Step 1: Preliminary Screening and Non-Technical Survey

The PIU shall determine whether the project area may be affected by UXO through a combination of desk review and field-based consultation.

This shall include:

- Referring to UXO risk maps and village lists provided by the National Regulatory Authority (NRA);
- Consulting with village authorities and local communities to gather local knowledge and historical information on UXO incidents; and
- Coordinating with NRA or relevant authorities, where needed, to obtain available data or support for non-technical survey.

Step 2: Determination of UXO Risk

- If UXO risk is not identified:
    - Confirm the results of the preliminary screening and non-technical survey (Step 1)
    - Proceed with project implementation.
- If UXO risk is identified:
    - If the preliminary screening and non-technical survey (Step 1) indicate potential UXO risk:
    - Proceed to technical survey and clearance (Step 3).

E. UXO Survey and Clearance

Step 3: Technical Survey and Clearance

UXO survey and clearance shall be conducted through one of the following approaches:

- Coordination with district or provincial authorities (e.g., District Governor's Office or Provincial Office of Foreign Affairs) to request support from authorized UXO organizations; or
- Engagement of licensed UXO operators (e.g., registered companies or authorized organizations).

Step 4: UXO Clearance Certification

- Upon completion of survey and clearance, the responsible UXO organization shall coordinate with the NRA;
- An official UXO Clearance Certificate shall be issued by the NRA.

Step 5: Commencement of Works

- Civil works shall commence only after UXO clearance is completed and certified;

F. Procedure for Unexpected UXO Discovery

- Stop work immediately
- Evacuate area
- Mark and secure location
- Notify PIU and NRA
- Wait for authorized clearance

G. Awareness and Training

Where UXO risks are identified, UXO risk awareness training shall be provided to:

- Project staff;
- Contractors and workers;
- Local communities (where relevant); and
- Workers shall be informed not to touch or disturb suspicious objects and to report immediately

H. Documentation and Reporting

The following documents shall be maintained:

- Non-technical survey records; or
- Technical survey and clearance reports; and
- UXO Clearance Certificate issued by NRA

32.5 Annex 9 – Reportable Incidents

The following incident types are to be reported using the environmental and social incident response process.

- **Fatality**: Death of a person(s) that occurs within one year of an accident/incident, including from occupational disease/illness (e.g., from exposure to chemicals/toxins).
- **Lost Time Injury**: Injury or occupational disease/illness (e.g., from exposure to chemicals/toxins) that results in a worker requiring 3 or more days off work, or an injury or release of substance (e.g., chemicals/toxins) that results in a member of the community needing medical treatment.
- **Acts of Violence/Protest**: Any intentional use of physical force, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, deprivation to workers or project beneficiaries, or negatively affects the safe operation of a project worksite.
- **Disease Outbreaks**: The occurrence of a disease in excess of normal expectancy of number ofcases. Disease may be communicable or may be the result of unknown etiology.
- **Child Labor:** An incident of child labor occurs: (i) when a child under the age of 14 (or a higher age for employment specified by national law) is employed or engaged in connection with a project, and/or (ii) when a child over the minimum age specified in (i) and under the age of 18 is employed or engaged in connection with a project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral or social development.
- **Forced Labor:** An incident of forced labor occurs when any work or service not voluntarily performed is exacted from an individual under threat of force or penalty in connection with a project, including any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor-contracting arrangements. This also includes incidents when trafficked persons are employed in connection with a project.
- **Environmental pollution incident:** Exceedances of emission standards to land, water, or air (e.g., from chemicals/toxins) that have persisted for more than 24hrs or have resulted in harm to the environment.
- **Discrimination based on SOGI:** Discrimination means creating a distinction, exclusion, or restriction which has the purpose or effect of impairing or excluding a person based on their real or perceived sexual orientation, gender identity, gender expression, or sex characteristics from being on an equal basis with others.
- **Sexual Exploitation:** Any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed operations/projects, sexual exploitation occurs when access to or benefit from a Bank financed Goods, Works, Non-consulting Services or Consulting Services is used to extract sexual gain.
- **Sexual Abuse:** Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions. In Bank financed operations/projects, sexual abuse occurs when a project related worker (contractor staff, subcontractor staff, supervising engineer) uses force or unequal power vis a vis a community member or colleague to perpetrate or threat to perpetrate an unwanted sexual act.
- **Sexual Harassment:** Any unwelcome sexual advance, request for sexual favor, verbal or physical conduct or gesture of a sexual nature, or any other behavior of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another, when such conduct interferes with work, is made a condition of employment, or creates an intimidating,

hostile or offensive work environment. In Bank financed operations/projects, sexual harassment occurs within the context of a subcontractor or contractor and relates to employees of the company experiencing unwelcome sexual advances or requests for sexual favor or acts of a sexual nature that are offensive and humiliating among the same company's employees.

- **Other**: Any other incident or accident that may have a significant adverse effect on the environment, the affected communities, the public, or the workers, irrespective of whether harm had occurred on that occasion. Any repeated non-compliance or recurrent minor incidents which suggest systematic failures that PMU deems needing the attention of the WB.

For environmental and social incidents

4.A. Form to be completed by PMU within 48 hours

B1: Incident Details			
Date of Incident:	**Time:**	**Date Reported to PIU:**	**Date Reported to WB:**
Reported to PIU by:	**Reported to WB by**:	**Notification Type**: Email/'phone call/media notice/other	
Full Name of Main Contractor:		**Full Name of Subcontractor**:	

B2: **Type of incident (please check all that apply)**[1]
Fatality ☐ Lost Time Injury ☐ Displacement Without Due Process ☐ Child Labor ☐ Acts of Violence/Protest ☐ Disease Outbreaks ☐ Forced Labor ☐ Unexpected impacts on heritage resources ☐ Unexpected impacts on biodiversity resources ☐Environmental pollution incident ☐ Dam failure ☐ Other ☐

B3: Description/Narrative of Incident
For example: *I. What is the incident?* *II. What were the conditions or circumstances under which the incident occurred (if known)?* *III. Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions?* *IV. Is the incident still ongoing or is it contained?* *V. Have any relevant authorities been informed?*

B4: Actions taken to contain the incident			
Short Description of Action	**Responsible Party**	**Expected Date**	**Status**
For incidents involving a contractor: Have the works been suspended under Contract GCC8.9? Yes ☐; No ☐; Name of Contractor:			

B5: What support has been provided to affected people

4.B. Form to be completed by PMU (following investigation)

C3a: Fatality/Lost time Injury information

Cause of fatality/injury for worker or member of the public (please check all that apply):

1. Caught in or between objects ☐ 2. Struck by falling objects ☐ 3. Stepping on, striking against, or struck by objects ☐
4. Drowning ☐ 5. Chemical, biochemical, material exposure ☐ 6. Falls, trips, slips ☐ 7. Fire & explosion ☐
8. Electrocution ☐ 9. Homicide ☐ 10. Medical Issue ☐ 11. Suicide ☐ 12. Others ☐
***Vehicle Traffic:* 13. Project Vehicle Work Travel ☐ 14. Non-project Vehicle Work Travel ☐ 15. Project Vehicle Commuting ☐**
16. Non-project Vehicle Commuting ☐ 17.Vehicle Traffic Accident (Members of Public Only) ☐

Name	Age/DOB	Date of Death/Injury	Gender	Nationality	Cause of Fatality/Injury	Worker (Employer)/Public

C3b: Financial Support/Compensation Types (To be fully described in Corrective Action Plan template)

1. Contractor Direct ☐ 2. Contractor Insurance ☐ 3. Workman's Compensation/National Insurance ☐
4. Court Determined Judicial Process ☐ 5. Other ☐ 6. No Compensation Required ☐

Name	Compensation Type	Amount (US$)	Responsible Party

C4: Supplementary Narrative

For SEA/SH Incident

4.C. Incident Form for SEA/SH (to be completed by PMU within 48 hours)

B1: Incident Details		
Date of incident intake by theproject/GM:	**Date Reported to PIU:**	**Date Reported to WBG:**
Reported to project/GM by: ☐ Survivor ☐ Third party ☐ Other: _____ **Is a record of this incident in GM?** Yes ☐ No ☐	**Reported to PIU by**: ☐ GM operator ☐ Directly, by Survivor ☐ Directly, by third party ☐ Other: _	**Reported to WBG by**: ☐ PIU ☐ Directly, by Survivor ☐ Directly, by third party ☐ Other: _____

B2: **Incident type (please check all that apply)** See Appendix 1 for definitions
Sexual exploitation ☐ **Sexual abuse** ☐ **Sexual harassment** ☐

B3: Provide the following details from the GM record	
Age of survivor (if recorded in GM):	Have the national legislation or mandatory reporting requirements been followed? Yes ☐ No ☐
Sex of survivor (if recorded in GM): Male ☐ Female ☐ Other ☐	Was the survivor referred to service provision?[2] Yes ☐ No ☐
Is the survivor employed by the project (as indicated bythe survivor or complainant and reported in the GM)? Yes ☐ No ☐	Is the alleged perpetrator employed by the project (asindicated by the survivor or complainant and reported in the GM)? Yes ☐ No ☐

B4: Basis for further action	
a. Has the complainant provided informed consent tolodge a formal complaint? Yes ☐ No ☐	c. Has the survivor provided informed consent to be partof an investigation into misconduct? Yes ☐ No ☐
b. Does the employer have a suitable administrative process and capacity in place to investigate misconductrelating to SEA/SH in a survivor-centered way?	d. Has the complaint been filed anonymously or through athird party? Yes ☐ No ☐

Yes ☐ No ☐	
If the answer to any of these questions is no, has the GM assessed the risks and benefits of carrying out an investigation into the alleged misconduct, taking into account the survivor's safety and wellbeing? Yes ☐ No ☐	
Will an investigation into misconduct be undertaken in addition to an investigation into adequacy of project systems, processes or procedures? Yes ☐ No ☐	

4.D. Incident Form for SEA/SH (to be completed by PMU following SEA/SH investigation)

C1: Findings of the investigation		
Have sanctions against a perpetrator been recommended as part of an investigation intomisconduct? Yes ☐ No ☐	Has an investigation into adequacy of project systems, processes or procedures been undertaken? Yes ☐ No ☐	
C2: Corrective actions to be implemented (To be fully described in Corrective Action Plan)		
Short Description of Action (SEA/SH examples)	**Responsible Party**	**Timeline for completion/Status**
Referral of Survivor to holistic care services		
Undertake disciplinary investigation in accordancewith GM timelines and confirmed process		
Disciplinary actions, including sanctions, to beapplied following misconduct investigation by Employer		
Increased training on Codes of Conduct (CoC)		
Audit of implementation of SEA/SH safetymitigation		
Strengthened awareness training on project-related risks, CoC and how to report incidents for project-affected community		
Training for project supervisors on the need tofollow guidelines of behavior in CoC and theirsupervisory responsibilities		
Plan to improve coverage/quality of service provision		
Any other system strengthening measures orcorrections for system failures that are necessary		

32.6 Annex 10 – Environmental and Social Code of Practice (ESCOP)

32.6.1 Introduction and scope of application

The ESCOP also covers other small civil works: smaller office renovations for the PIUs, monitoring stations and similar small structures. It applies only if screening (Annex 2) identifies small and temporary impacts with no land acquisition, land-use restriction or resettlement is involved, there are no adverse effects on ethnic groups or cultural heritage, and the site is not in a protected or sensitive area.

Anticipated negative impacts during construction and renovation concern the health and safety of workers and nearby residents from dust, noise, erosion and sediment runoff, solid and hazardous waste, traffic, worker influx (including SEA/SH risks) and inadequate use of personal protective equipment (PPE).

The ESCOP does not apply to the rehabilitation of the Nam Houm, Nam Suang and Nam Hin dams, spillways, outlet works, canals and associated works, which require a site-specific ESIA, ESMP, C-ESMP and the minimum dam safety plans (Section 1.3.4, Chapter 5). If screening finds any trigger in Annex 2 (land acquisition, ethnic groups, cultural heritage, protected areas, significant risks), a site-specific ESMP is required and the ESCOP applies only as a supplement.

32.6.2 Objectives

This ESCOP mitigates the limited environmental and social impacts of small civil works. It will be a compulsory part of the procurement documents and works contracts, so that the Contractor meets the environmental and social covenants. The PIU is accountable and assigns staff to track enforcement. Before works start, the Contractor prepares a short ESCOP implementation plan showing how each requirement will be applied on site.

32.6.3 Responsibilities

- **PIU:** appoints a qualified E&S focal point who (i) monitors the Contractor's conformity with the ESCOP; (ii) takes remedial action on non-compliance; (iii) reviews reports and documents remedial action; (iv) tells the Contractor when additional action is needed; (v) tracks complaint-related actions; and (vi) reports monthly to the PMU.
- **ISWS or site supervision engineer:** inspects works against the ESCOP, issues corrective action requests, and reports to the PIU and PMU.
- **PMU with the E&S Consultant (Firm):** reviews the Contractor's ESCOP implementation plan, monitors compliance periodically, and reports to the World Bank in the bi-annual E&S monitoring reports.
- Contractor: complies with the ESCOP, national laws, the World Bank ESF requirements reflected in the contract, and the Project ESCP, LMP and Code of Conduct.

32.6.4 General provisions

1.1 Contractor responsibility. The Contractor makes best efforts to reduce negative impacts on the environment and residents and pays for any damage. Performance is supervised by the ISWS or site supervision engineer and periodically monitored by the E&S Consultant, PIU, local authorities or communities. "Works" includes site preparation, demolition, spoil and waste removal and all construction and renovation activities. The ESCOP implementation plan covers site layout, waste and material storage, work hours, traffic arrangements, ESHS staff, emergency arrangements and the community liaison officer's contact details, and is approved by the PIU.

1.2 Incident reporting. The Contractor and subcontractors must notify the ISWS or supervision engineer, the PIU and the PMU within 24 hours of any serious non-compliance, take immediate remedial action where practices are dangerous, and keep incident records. Minor non-compliance is reported monthly to the PIU. Serious incidents (fatalities, serious injuries, violence, SEA/SH allegations, child or forced labor, major pollution, unexpected impacts on heritage or biodiversity) are reported by the PMU to the World Bank within 48 hours under the ESIRT and Annex 10. Grievances forwarded by the PIU, the Project GRM or the police are handled within 24 hours, and the supervision engineer verifies the action taken.

1.3 Local authorities and public. Before and during works, the Contractor works with local authorities, complies with Government regulations (including life and fire safety), informs the public about the works, and runs a "Hot Line" staffed during working hours and linked to the Project General GRM.

1.4 Community relations. The Contractor assigns one community-relations officer as first point of response. It engages with residents of ethnic group backgrounds (using local languages where needed), residents with disabilities, women and other priority groups, informs nearby residents in advance of works and their duration, logs and answers all calls, displays the Hotline number on site signboards, and manages sites, camps (if any) and workers so as to avoid social impacts. Violation of the prohibitions in Section 1.7 may lead to disciplinary action, from reprimand to dismissal.

1.5 ESHS requirements. The Contractor complies with the World Bank ESF and the World Bank Group Environmental, Health and Safety (EHS) Guidelines, and prepares the ESCOP implementation plan and an occupational health and safety (OHS) procedure. Minimum site rules:

- ESHS orientation before work starts, including the Code of Conduct and SEA/SH awareness; PPE worn at all times; notice-board instructions followed; barricades maintained;
- accidents reported promptly to the authority and to the ISWS, PIU and PMU;
- vehicles driven at safe speeds (30 km/h limit) on designated routes by licensed drivers, and parked only in designated areas;
- UXO screening and, where required, clearance and NRA certification before works start (Annex 8);
- health and hygiene: medical facilities and first aid, hygienic food and safe drinking water, and drainage and sanitation in any camp; security: controlled attendance, restricted access, no weapons or hunting, and fencing of the camp or work site.

1.6 Labor, Code of Conduct and SEA/SH. The Contractor complies with the Project Labor Management Procedures (LMP): local hiring where possible, no child or forced labor, written contracts, safe conditions, timely payment and a worker grievance mechanism. All workers sign and are trained on a Code of Conduct prohibiting sexual exploitation and abuse, sexual harassment and violence against children. Allegations go through the SEA/SH GRM and are handled in a survivor-centered way (Chapter 7).

1.7 Prohibitions. On or near work sites: cutting trees; hunting, fishing, wildlife capture or plant collection; keeping caged wild animals; explosive or chemical fishing; disturbing items of architectural or historical value (chance finds follow Annex 7); building fires; unapproved toxic materials (lead-based paints, asbestos); firearms (except authorized guards); alcohol during working hours; unsafe driving; washing vehicles in streams; maintenance outside authorized areas; nuisance in communities; unauthorized dumping, littering or burning of waste or vegetation; firewood collection; defecating outside facilities; and sexual or other exploitation, harassment or abuse of community members or workers, and employment of children.

32.6.5 Specific requirements

The Contractor will, in addition to Table A10-1:

- place any work camp (if any) away from water points, houses and sensitive areas, in consultation with the community and PIU;
- comply with Lao PDR laws and permits for construction, renovation and demolition, protect public property, avoid damage to private property and compensate for damage;
- protect against dust, noise, vibration, fuel and oil residues; manage waste properly with no burning on site; avoid discharge of wastewater, oil or pollutants to soil, water, sewers or drains;
- prevent standing water in open pits and excavations, and use safe construction materials and methods;
- source materials only from licensed quarries and borrow areas; protect and re-vegetate soil surfaces, replant felled trees, and preserve fauna, flora and sensitive habitats;
- manage traffic with local authorities, apply speed limits, register vehicles and drivers, and install work signs; ensure no blockage of access to households or fields and provide alternative access, footbridges and drainage;
- respect cultural sites and the privacy and security of women and nearby households and work sites, and dispose of asbestos safely;
- follow the Chance Find Procedure (Annex 7), stopping work if archaeological remains, graves or sacred objects are found;
- separate and dispose of e-waste and packaging from IWMC and PIU equipment at an approved facility, and buy only new equipment with valid warranties;
- where works are near irrigation canals, reservoirs or drainage channels, protect water users and give at least two days' notice of planned water or power interruption.

32.6.6 Works management and monitoring

This section sets out typical measures for small civil works. Table A10-2 is applied and monitored for works with minor E&S risks, and the Do and Do Not list in Table A10-3 applies to all workers and contractors and is displayed on site in Lao and, where needed, local languages. The ISWS or site supervision engineer supervises the Contractor's performance. Final contract requirements must be consistent with the final detailed design.

Table A10-1: Potential risks and proposed mitigation measures for small civil works under the WISER Project

Risk / Issue	Mitigation measures
1. Dust / air pollution	Cover truckloads of loose materials; wear masks; spray water where appropriate, but not where it creates runoff into canals or streams; cover or wet stockpiles; no open burning. Dust must not be perceived as a nuisance by PIU staff, neighbors or local authorities.
2. Noise and vibration	Slow vehicles near sensitive areas; point noise away from receptors; maintain plant; work 8 am to 5 pm only (deviation with local authority consent); earplugs for loud machines; prefer low-noise equipment; use screens or hoardings around noisy activities.
3. Earthworks and drainage (new building, monitoring stations)	Limit clearing to the approved footprint and reuse topsoil; install temporary drains and silt traps before earthworks; no silty water into canals, reservoirs or streams; avoid major earthworks in heavy rain; stabilize or re-vegetate bare surfaces; place surplus spoil only at sites approved by the PIU and local authority.
4. Solid, chemical and hazardous waste	Provide bins and recycling at all work places; no burning, burial or on-site disposal of hazardous waste; reuse or send recyclables to approved landfills; store hazardous materials on impervious bounded flooring with labeled containers; use licensed transporters and disposal facilities; train staff in safe handling.
5. Asbestos (office renovations)	Mark asbestos as hazardous; contain and seal where possible; wet before removal; use skilled professionals; store in closed marked containment; no reuse. Stop works that would disturb asbestos until the PIU and supervision engineer approve a handling method.
6. E-waste	Buy only new devices with warranties from reliable vendors; avoid refurbished devices; separate e-waste in marked bins and dispose of it at an approved facility; store and dispose of IWMC equipment packaging with other waste.
7. Utility and water interruption	Give PIU staff and neighbors at least 2 days' notice of planned water or power disturbances; repair damaged cables promptly; near canals, reservoirs or drains, protect water users and give notice of interruption.

8. Worker and public safety	Train workers on OHS rules and provide PPE; install fences, barriers and warning signs around the work area; provide first aid and an emergency contact list on site.
9. UXO and chance finds	Screen for UXO (Annex 8) and complete clearance and NRA certification where required before ground disturbance. On any suspicious object, stop work, evacuate, secure the area and notify the PIU and NRA. Apply the Chance Find Procedure (Annex 7) on any find.
10. Traffic and access	Use designated routes with a 30 km/h limit; provide traffic control at site entrances and community crossings; keep access to households, fields and canals open or provide alternatives.
11. Labor, SEA/SH and worker influx	Apply the LMP and worker grievance mechanism; all workers sign and are trained on the Code of Conduct; report allegations through the SEA/SH GRM; hire locally where possible.
12. Communication with PIU staff (incl. provincial and district agencies) and communities	Share project details before construction; give contact details and a work timetable; respect local culture; post notice boards with site manager, environmental, and health and safety contacts in Lao and, where needed, local languages, so complaints and suggestions can be raised.

Table A10-2: Management and monitoring of works

#	Activity causing impacts	Mitigation measures	Monitoring indicators
1	Worker camps (if any)	Site approved by the PIU and local authority after tripartite consultation; provide security, latrines and septic tanks, safe water, mosquito nets, fire equipment; washing and kitchen water to sumps, with latrines, septic tanks and sumps away from water bodies and above groundwater level.	Camp on site plan; no complaints; safe living conditions.
2	Material and equipment yards, access roads	Locate away from residences and canals; control dust, noise, vibration, water pollution and waste. Keep machinery within the work boundary; spray access tracks daily; enforce speed limits; restrict vehicles to designated routes; use a traffic person in villages.	No complaints on dust, noise, vibration or road safety.
3	Waste from site and camp	Recycle metal and glass; bury or compost organic waste in a covered impervious pit only where approved by the PIU; do not affect natural drainage.	No health issue; no waste outside designated areas.
4	Workforce and safety	Hire locally as much as possible; provide PPE for hazardous materials, concrete works and welding; provide safe drinking and construction water. Do not draw water from canals or reservoirs used by farmers without PIU approval.	Share of local workers; no lost-time injuries.
5	Social issues, interruption of services	Avoid conflict with local power holders; hold focus groups with men and women on water and other issues from the works; inform residents of interruptions.	No social conflict or complaints.
6	Fuels, oils, lubricants and hazardous storage	Handle and store with secondary containment; label tanks on impervious lining with dykes; plan refueling to avoid spills; check vehicles for leaks; no contaminated effluent released.	No spills; no contamination.
7	Tree cutting near work site	Minimize cutting; obtain agreement of the community and authorities, and replant.	No complaints.
8	Dust, smoke and noise	Cover loads; water spray; 30 km/h limit; tune vehicles; fit silencers; no loud radios.	Dust, smoke and noise controlled.
9	Earthworks and drainage	Temporary drains and silt traps before earthworks; stabilize or re-vegetate on completion; spoil only at approved sites.	No silty water in canals or streams; no erosion scars.
10	UXO and chance finds	UXO screening, clearance and NRA certification where required before ground disturbance (Annex 8); stop work and apply Annex 7 on any find.	UXO record and certificate on file; chance finds reported.
11	Labor, Code of Conduct, SEA/SH	All workers sign and are trained; LMP applied; worker and SEA/SH GRM contacts posted on site.	100% trained and signed; zero SEA/SH, child or forced labor cases; grievances resolved.
12	Damage to assets or crops and disruption of access	Record pre-work conditions with affected people. Promptly restore access and repair or compensate for damage to assets, crops or other property in accordance with the contract and applicable Project instruments. Record complaints and their resolution through the Project GRM.	Pre-work records, verified restoration or compensation, and complaints tracked to resolution.

Table A10-3: Management of small construction works, Do and Do Not list

Do	Do not
• Use the toilets provided and report dirty or full ones • Clear litter and rubbish daily; use bins • Report fuel or oil spills immediately and stop the spill • Smoke in designated areas only • Keep work and equipment storage within the work area • Use all safety equipment and procedures • Prevent pollution of streams and channels • Keep a fire extinguisher at hand for hot work	• Damage vegetation or cut trees outside the approved work site • Make fires or burn waste • Harm, trap, feed, buy or keep wild animals; fish with explosives or chemicals • Enter fenced-off or marked areas • Drive recklessly or above the speed limit • Let waste, oils or materials enter streams, canals or reservoirs • Litter, or dispose of waste in unauthorized places

• Report any injury to workers or animals • Drive on designated routes within speed limits, never after alcohol • Prevent excessive dust and noise • Respect community members and colleagues, and report SEA, harassment, abuse, gender-based violence or violence against children through the GRM • Stop work and report any suspicious object (possible UXO), archaeological remains or graves	• Use unapproved toxic materials (lead-based paint, asbestos) • Disturb items of architectural or historical value • Use firearms (except authorized guards) or alcohol in work hours • Wash vehicles or clothes in streams; do maintenance outside authorized areas • Work without safety equipment • Create nuisance in communities, collect firewood or use latrines outside facilities • Touch or move suspicious objects (possible UXO) • Employ or engage children, or have sexual relationships with community members or minors