

# Environmental Review

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Project Number: 50236-002  
Sept 2021

Lao PDR: Sustainable Rural Infrastructure and  
Watershed Management Sector Project

Annex A: Environmental Code of  
Conduct

Nam Phieng Irrigation Subproject  
Phieng District  
Xayaboury Province

Prepared by the Ministry of Agriculture and Forestry for the Asian Development Bank.

## **CURRENCY EQUIVALENTS**

(as of 5 April 2019)

Currency Unit	–	Kip (KN)
KN1.00	=	\$0.000116
\$1.00	=	KN8,600

## **ABBREVIATIONS**

ADB	:	Asian Development Bank
COL	:	Concessional OCR lending
DAFO	:	District Agriculture and Forestry Office
DALAM	:	Department of Agricultural Land Management
DDMCC	:	Department of Disaster Management and Climate Change
EIA	:	Environment Impact Assessment
ERP	:	Emissions Reduction Program
FAO	:	Food and Agriculture Organization (of the United Nations)
GCF	:	Green Climate Fund
GIZ	:	Deutsche Gesellschaft für Internationale Zusammenarbeit (German International Cooperation Agency)
IEE	:	Initial Environment Examination
IUCN	:	International Union for the Conservation of Nature
IWMI	:	International Water Management Institute
LIC	:	Loan Implementation Consultant
MAF	:	Ministry of Agriculture and Forestry
MONRE	:	Ministry of Natural Resources and Environment
NGO	:	Non-governmental Organisation
NRI	:	Northern Rural Infrastructure Development Project
NSEDP	:	National Socio-Economic Development Plan
NTFP	:	non-timber forest product
PAFO	:	Provincial Agriculture and Forestry Office
PDR	:	People's Democratic Republic (of Laos)
PGT	:	Program Governance Team
PLUP	:	participatory land use planning
PPIT	:	Provincial Project Implementation Team
PONRE	:	Provincial Office of Natural Resources and Environment
PRI	:	productive rural infrastructure
RSP	:	representative subproject
SRIWSM	:	Sustainable Rural Infrastructure and Watershed Management
TRTA	:	Transaction Technical Assistance
WUG	:	water user group

## GLOSSARY

Catchment	In its totality a catchment is equivalent to a watershed, however a watershed may comprise of micro-catchments and sub-catchments. In this document a catchment refers to a subset of the larger watershed.
Watershed	A topographically delineated area from which rainwater drains as surface run-off via a river or stream to a common outlet point (e.g. a large river, lake or the sea).
Watershed management	<p>Securing watershed functions in a sustainable manner. Broadly these functions include:</p> <ul style="list-style-type: none"> <li>➤ Ecological function: availability of sufficient good quality water over time, space; erosion control, soil fertility, biodiversity, clean air, carbon sequestration;</li> <li>➤ Economic function: sufficient natural resource products like food, fuel wood, timber, water, fish, energy required for basic needs of the local population; income generating opportunities;</li> <li>➤ Social function: maintenance of social structures; protection and development of knowledge and lifestyle arrangements; maintenance and revitalisation of cultural identity and values, recreational facilities.</li> </ul>

## NOTE

- (i) In this report, “\$” refers to US dollars unless otherwise stated.

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<b>CONTENTS</b>		<b>Page</b>
<b><u>I.</u></b>	<b><u>INTRODUCTION</u></b>	<b>1</b>
	<u>A. Nam Phieng Subproject</u>	1
	<u>B. Purpose of the Environmental Code of Conduct</u>	1
<b><u>II.</u></b>	<b><u>SUBPROJECT IMPLEMENTATION RESPONSIBILITIES</u></b>	<b>1</b>
	<u>A. Provincial Project Implementation Team</u>	1
	<u>B. Institutional arrangements for implementation of environmental safeguards</u>	7
<b><u>III.</u></b>	<b><u>ENVIRONMENTAL MANAGEMENT AND MONITORING MATRIX</u></b>	<b>9</b>
	<u>A. Introduction</u>	9
	<u>B. Subproject Construction Phase during Project implementation</u>	9
	<u>C. Subproject Operation Period following Project implementation</u>	23

## **List of Appendixes**

### Reference Documents

Appendix 1. Responsibilities of the Provincial Agriculture and Forest Office

Appendix 2. Responsibilities of the Contractor

Appendix 3. Responsibilities of the Water User Group – Operation Period

Appendix 4. Project Environmental Guidelines



## **VII. INTRODUCTION**

### **A. Nam Phieng Subproject**

86. The Nam Phieng Subproject is to support the upgrading of an existing irrigation distribution system serving households in a number of villages. The subproject covers two distinct areas. The productive rural infrastructure (PRI) element will cover the existing Nam Phieng 1 and Nam Phieng 2 command areas, specifically improving various distribution canals leading into and around the command areas. The other part of the subproject is the Nam Phieng catchment above the headworks, where watershed management improvements are being implemented by the Provincial Agriculture and Forestry Office (PAFO) to help safeguard the quality and quantity of the irrigation water supply.

87. The subproject is to be implemented as one of the interventions financed in Xayaboury Province by the Sustainable Rural Infrastructure and Watershed Management - Sector Project (SRIWSM). This project is a joint undertaking of the Government of Lao PDR (the government or GOL) and the Asian Development Bank (ADB).

### **B. Purpose of the Environmental Code of Conduct**

88. This Environmental Code of Conduct has been prepared in compliance with the specified safeguard requirements of the borrower, the Government of Lao PDR (the government), and the main financing organisation, the Asian Development Bank (ADB). It accompanies an Environmental Review (ER) that: (i) provides an overview of the proposed subproject and its purposes; and (ii) makes an evaluation of the likely impacts that will occur to the environment as a result of the proposed subproject activities.

89. This Environmental Code of Conduct outlines the mitigation measures that will be required to ensure that no part of the project causes significant damage to the environment.

90. The Environmental Code of Conduct has been prepared on the basis of the design for the subproject, and its likely effects on the environment, as evaluated in the ER. It defines the anticipated environmental impacts, the measures required to mitigate them, the responsibilities for doing so and the responsibility for monitoring that they have been undertaken effectively at the right time. Following the approval of the ER, this Code of Conduct forms the guiding document to ensure that all necessary environmental safeguards are put in place.

91. Adherence to this Code of Conduct is a condition of the use of ADB financing for the Nam Phieng Subproject. Acceptance of and a commitment to implement the Code of Conduct must form part of the contractual conditions for any physical engineering works under the subproject.

## **VIII. SUBPROJECT IMPLEMENTATION RESPONSIBILITIES**

### **A. Provincial Project Implementation Team**

92. The executing agency of the SRIWSM is MAF, with support from the IA - Department of Irrigation (DOI). Implementation is decentralised to the Provincial Agriculture and Forestry Offices (PAFO) where implementation activities will be assigned to the respective sections of PAFO, co-ordinated into a Provincial Project Implementation Team (PPIT) for the management of the SRIWSM Project.

93. The executing agency (i.e. MAF) and IA (i.e. DOI) will establish a Program Governance Team (PGT) that would be responsible for: (i) establishing the operational procedures to be used by the PPIT, including planning, budgeting, financial management, procurement, disbursement, contract management, safeguard monitoring and compliance monitoring; (ii) ensuring both government and donor audit requirements are met; (iii) providing capacity building at the provincial level for both PPIT staff and potential contractors; and (iv) providing technical support for advanced engineering designs and project management teams, including the provision of skill mentoring and technical assistance input to procurement and contract management.

94. Government staff are therefore involved in environmental management and monitoring at a number of levels and in two main ministries: MAF for both management and monitoring; and MONRE as delegated to PONRE for monitoring. The capabilities required of staff varies depending on the phase of the subproject, and their level and remit, but the common thread required by all is a sound understanding of the environment and society in the rural hill catchments of the northern provinces, and a particular understanding of current issues in both upland and irrigated agriculture. PONRE staff have the underlying environmental knowledge but often lack the technical expertise to address specific issues. DONRE staff are far less experienced and qualified. The Loan Implementation Consultants – both international and National will provide (i) Project awareness training, (ii) technical training with respect to environmental monitoring systems and techniques that will apply to their specific subproject (most PONRE have only 3 subprojects to monitor), (iii) PONRE staff receive budgetary support for their additional costs on an output basis ie. PAFO will pay for monitoring reports received. In addition, PONRE and DONRE monitoring staff will be supported for regular site visits by the construction supervision staff of PAFO.

95. During the project implementation period, which effectively involves subproject design and construction phases, safeguards are the responsibility of the Vice Governor Office represented by PAFO with support from the PGT within the Department of Irrigation. Environmental safeguards will be assigned through a Memorandum of Understanding (MoU) between the Vice Governor Office, Director of PAFO and Director of PONRE. The Loan Implementation Consultant (LIC) team will include international and national environmental safeguard consultants who will provide additional support. PAFO Project management staff, will work with the construction supervision staff, PONRE and DONRE staff to provide the monthly, quarterly safeguard reports that will be submitted to the Vice Governor, and the EA via the PGT in DOI.

96. At the provincial level, a PAFO will assign overall project management to an existing PAFO Deputy Director General and will implement subprojects. Within each PAFO, the technical staff will be assigned to the PPIT must be able to monitor the implementation of works programs with the supervision role also maintaining both social and environmental checklists for site visits. The submission of safeguard reports to the Vice Governor and to the PGT will trigger a consolidation report from the PGT that will be submitted to ADB twice yearly for review and approval.

97. The project implementation responsibilities as set out in the PAM are provided in Table 1.

**Table 1: Responsibilities Regarding the Environment and Related Safeguards.**

Project organisation	Management Roles and Responsibilities
Ministry of Finance (MOF)	<ul style="list-style-type: none"> <li>• Establish the Project's Advance Account,</li> <li>• Manage direct payments to contractors,</li> <li>• Provide replenishment reports to ADB,</li> <li>• Provide advances to Implementing Agencies Subaccounts,</li> </ul>

Project organisation	Management Roles and Responsibilities
Ministry of Agriculture and Forestry (MAF) - Executing Agency (EA)	<ul style="list-style-type: none"> <li>• Overarching financial control.</li> <li>• The EA will constitute a national steering committee with representatives of MAF, Office of Governor (Implementing Agency – IA) of four northern provinces (FNP), MOF, Ministry of Planning and Investment (MPI) and Ministry of Natural Resources and Environment (MONRE).</li> <li>• Responsible for ensuring loan agreements and covenants and assurances are achieved.</li> <li>• Responsible for internal monitoring of the States' interests.</li> </ul>
National Steering Committee (NSC)	<ul style="list-style-type: none"> <li>• Provide guidance to the IAs and EAs in terms of project scope of work, expected performance standards, remedial action.</li> <li>• Ensure cross sector coordination and integration of work plans</li> <li>• Confirm annual performance.</li> <li>• Membership will include MAF – Minister, Governors of the FNP, Provincial Agriculture and Forestry Offices (PAFO) Director Generals (DG) from each province, and Deputy Director Generals (DDG) of Department of Irrigation (DOI).</li> </ul>
DOI – IA	<ul style="list-style-type: none"> <li>• Support and operate the Program Governance Team and represent the EA in the day to day implementation of the project.</li> <li>• Provide technical support on irrigation and institutional issues.</li> <li>• Consolidate financial and progress reports for the MAF ADB.</li> <li>• Consolidate and quality check all withdrawal applications and replenishment requests to be forwarded to MAF's Department of Planning and Finance (DOPF) for clearance and onward forwarding to MoF.</li> </ul>
MAF's DOPF	<ul style="list-style-type: none"> <li>• Define and validate the project management systems to be applied across the programme to ensure that government and ADB requirements are met.</li> <li>• Verify all subproject draft procurement (including safeguards) documentation prior to be submitted to ADB or publicly advertised.</li> <li>• Undertake a quality control and verification of the quarterly and annual reports that will have document quality control procedures and an endorsement page.</li> <li>• Ensure financial management systems (FMS) are consistent with MAF's requirements.</li> <li>• Ensure that project reporting systems support both Government and ADB requirements.</li> <li>• Provide quality assurance for the replenishment and disbursement documentation to be provided to ADB and MOF.</li> </ul>
Program Governance Team (PGT) within the DOI	<ul style="list-style-type: none"> <li>• Overall program management and coordination of the project</li> <li>• Prepare a code of conduct including accountability of individuals, authority and levels of delegated authority, jurisdiction and mandate limits.</li> <li>• Produce a project management manual, and the supporting templates, guidelines for planning, budgeting, financial accounts, disbursement, procurement, contract management, reporting, safeguards and audit.</li> <li>• Provide the consolidation and quality assurance function with the project for all work planning, budgeting and financial management records, replenishment requests, withdrawal applications that are then forwarded to DOPF.</li> </ul>



Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Conduct assigned procurement of (i) vehicles, (ii) equipment, (iii) loan implementation consultants (LIC), and (iv) other consultants and service providers.</li> <li>• Facilitate the development of provincial contractor awareness and capability.</li> <li>• Provide technical support for setting up project management systems and templates in the Provincial project implementation team (PPIT) and the required capability to operate these systems</li> <li>• Appoint a Gender focal point from MAF' Women Advancement Unit (WAU) to oversee and support the implementation of the gender action plan (GAP).</li> <li>• Undertake safeguard screening of additional subprojects in line with Resettlement and Ethnic Group Development Framework (REGDF) and Environmental Assessment and Review Framework (EARF) to confirm classifications, and that subprojects that would be classified as Category A to be excluded.</li> <li>• Ensure safeguard frameworks (REGDF and EARF) are applied in the screening, selection and assessment of subprojects and preparation of safeguard plans, Resettlement and Ethnic Group Development Plans (REGDPs) and Initial Environmental Examination / Environment Management Plans (IEEs / EMP) at the subproject level, to be reviewed and commented on within 30 working days by ADB.</li> <li>• Monitor implementation of safeguard requirements as set out in the REGDF/REGDPs and IEEs / EMPs/Environmental Code of Conduct (ECC) during subproject implementation.</li> <li>• Ensure that all subproject design reports (SDR) clearly demonstrate dry season water availability for the reliable irrigation whilst ensuring environmental minimum flow is sustained.</li> <li>• Assign two staff to act as safeguards focal points – one for resettlement and social safeguards and one for environmental safeguards, to provide safeguard oversight and input to semi-annual safeguards reports for submission to ADB.</li> </ul>
Provincial Steering Committee (PSC)	<ul style="list-style-type: none"> <li>• Each of the FNPs will establish a PSC chaired by the Governor, participating District Governors, Directors General of PAFO, Finance, Planning and Investment, Public Works and Transport Office (PWTO), Plant Protection Center, and Provincial office of Natural Resources and Environment (PONRE).</li> <li>• Review annual work plans and provide guidance on project scope and performance standards.</li> <li>• Approve annual work plans and receive regular progress reports</li> <li>• Establish operational memorandums of understanding (MOUs) between PAFO, PONRE, and PWTO.</li> </ul>
Provincial Procurement Committee (PPC)	<ul style="list-style-type: none"> <li>• Each of the FNPs will establish a PSC chaired by the Governor and including Provincial representatives.</li> <li>• Manage evaluation bidding documents, conduct scoring and ranking of bids.</li> <li>• Provide recommended procurement actions to PSC and PAFO.</li> </ul>
Provincial Project Implementation Team (within the PAFO)	<ul style="list-style-type: none"> <li>• Each provincial government will form within PAFO a Project Implementation Team (PPIT), aligned to the Provincial Irrigation Section (PIS). The PAFOs will identify implementation focal points in Department of Agriculture and Land Management (DALAM) and</li> </ul>

Project organisation	Management Roles and Responsibilities
	<p>DOF to be seconded into the project management structure of the PPIT to support activities relating to land use planning, catchment management and land registration administration.</p> <ul style="list-style-type: none"> <li>• PAFO will establish a gender focal point from the WAU that will be responsible for ensuring the GAP is implemented and that all stakeholders are fully aware of the GAP and the associated responsibilities</li> <li>• Each PAFO will appoint a safeguards focal point to supervise implementation of safeguard requirements and to co-ordinate project specific grievance redress mechanism and support provincial program safeguards focal point on periodic safeguards monitoring and reporting.</li> <li>• Establish operational systems with staff assigned who have the capacity to maintain the project administration and management systems.</li> <li>• Establish and maintain subproject monitoring and impact assessment using the productive rural infrastructure (PRI) representative subprojects (RSP) as learning sites.</li> <li>• Coordinate the ADB-financed activities and integrate these with the activities of other donor-financed programmes working on watershed management.</li> <li>• Provide quarterly and annual reports and semi-annual safeguards reports according to the templates specified by the PGT.</li> <li>• Ensure subproject REGDPs if any and IEE/EMPs are updated based on detailed engineering design, approved by ADB and disclosed on ADB website prior to contract awards.</li> <li>• Obtain final approval from the PAFO DG in accordance with the Irrigation Law 2014 - (Article 38).</li> <li>• Obtain environmental compliance certificates from the relevant PONREs prior to award of civil works contracts.</li> <li>• With support from the PGT, identify local contractors and conduct awareness and capacity building programmes to increase the inclusiveness of local contracting companies.</li> <li>• Complete land acquisition and compensation as per the REGDF prior to award of civil works contracts.</li> <li>• Contract management during implementation.</li> <li>• Ensure implementation of the mitigation and monitoring measures as set out in the EMPs and any required safeguards corrective actions.</li> <li>• Ensure implementation of the REGDF action plan.</li> <li>• Safeguards monitoring as per the land acquisition and resettlement plans (LARP) and REGDF subproject documents.</li> <li>• On project completion as confirmed by the construction supervision consultant (PG the Project Director (PAFO) conduct a site inspection in accordance with the Public Work and Irrigation Law. On confirmation of contract completion, PAFO will transfer the operation and maintenance (O&amp;M) of the asset to the water user group (WUG).</li> </ul> <p><b><u>For WUGs</u></b></p> <ul style="list-style-type: none"> <li>• Provide awareness and capacity building on project activities, WUG implementation roles and procurement modalities.</li> </ul>

Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Monitor and mentor water WUG contracting of in-command area works.</li> </ul>
PONRE Land Registration Department	<ul style="list-style-type: none"> <li>• Conduct land registration.</li> <li>• Issue land title and demarcation.</li> </ul>
PONRE Environmental Management Department	<ul style="list-style-type: none"> <li>• Conduct regular environmental monitoring of subprojects.</li> <li>• Undertake a general programme of monitoring environmental parameters (e.g. water quality) at strategic sample locations throughout the province.</li> <li>• A budget provision has been made for (i) training, (ii) travel and (iii) field allowances. Training is in the terms of reference (ToR) for the LIC consultants.</li> </ul>
MAF _ Plant Protection Centers	<ul style="list-style-type: none"> <li>• Identify the need for Pesticide Reduction Training, Crop Surveillance and integrated pest management as part of the LAOGAP quality assurance support</li> </ul>
MAF – Dept Agriculture and Land Management (DALAM)	<ul style="list-style-type: none"> <li>• Agricultural land use planning guidelines and verification.</li> </ul>
PAFO – DALAM	<ul style="list-style-type: none"> <li>• Agricultural land registration survey.</li> <li>• Consultation of land users in command areas.</li> <li>• Land registration proposal for agricultural land.</li> <li>• Participatory land use planning (PLUP) responsibilities</li> </ul>
MAF - Department of Forestry	<ul style="list-style-type: none"> <li>• Provide training and leadership in the issues surrounding ecological service protection for the land use change programs</li> <li>• Forest Land Use Guidelines and quality verification</li> </ul>
PAFO - Department of Forestry	<ul style="list-style-type: none"> <li>• Forest Land use zonation and survey demarcation.</li> <li>• Participate in PLUP when requested.</li> <li>• Supervision of forestry activities funded by ADB.</li> </ul>
Provincial Nutrition Committees	<ul style="list-style-type: none"> <li>• Facilitate multi-sectoral coordination for nutrition, including coordinating joint baseline and end line surveys to be developed by the National Nutrition Committee (NNC) Secretariat; ensuring alignment with any National Nutrition Advocacy and Communication Strategy and Plan of Action, or similar; supporting Joint Government of Lao PDR – Development Partners Monitoring Missions, etc.</li> <li>• Coordinate implementation and monitoring.</li> <li>• Undertake field monitoring activities.</li> <li>• Receive monitoring reports from districts and projects and provide annual and biannual reports to the NNC.</li> <li>• Provide leadership and support for District Nutrition Committees (DNC)</li> </ul>
DNC	<ul style="list-style-type: none"> <li>• Facilitate multi-sectoral coordination for nutrition, including identifying priority villages</li> <li>• Coordinate implementation and monitoring</li> <li>• Undertake field monitoring activities and provides annual and bi-annual reports to Provincial Nutrition Committee (PNC).</li> </ul>
District Agriculture and Forestry Office (DAFO)	<ul style="list-style-type: none"> <li>• Assign a focal point who should be at least a Deputy Head of the DAFO and should be the representative on the DNC. This officer will be responsible for planning and oversight of project Nutrition Support Advisor (NSA) activities in the district, including agreeing monthly and weekly workplans with the assigned technical staff</li> <li>• Assign one staff member to be responsible for the financial management related to project NSA activities</li> </ul>

Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Assign up to 3 full-time equivalent technical staff as members of District Nutrition Teams, with preference for female staff and staff belonging to local ethnic groups</li> <li>• Permit these assigned staff to participate in basic nutrition training and ensure that trained staff remain assigned for the duration of the project</li> <li>• Select priority villages in coordination with the DNC. The primary criterion will be nutrition needs as identified by the DNC, taking account of any other completed, ongoing or anticipated NSA interventions. The secondary criterion will be to give preference to nutrition priority villages in the watersheds and command areas of the PRI subprojects.</li> <li>• Collaborate with the Lao Womens Union (LWU) to form nutrition clubs in the selected villages, and provide them with NSA activities using a farmers' nutrition school approach, resulting in group and / or individual NSA development plans</li> <li>• Provide technical support to facilitate implementation of the development plans</li> </ul>

## B. Institutional arrangements for implementation of environmental safeguards

98. **PGT.** The PGT will appoint a qualified environmental safeguards officer to supervise and co-ordinate implementation of environmental safeguard requirements with support of the LIC International and National Environment Specialists. The PGT Project Director will be responsible for submitting semi-annual environmental safeguard reports to ADB for clearance and disclosure. They will also carry out regular monitoring during implementation and prepare a summary of progress of Environmental code of conduct and grievance redress mechanism (GRM) implementation for the quarterly project progress reports. They will participate in ADB loan review missions, ensure that semi-annual environmental safeguards monitoring reports are submitted to ADB on time and follow-up on agreed actions.

99. **PPIT.** Each PPIT will nominate an environmental safeguards focal point to support LIC Environment Specialists and PGT with co-ordination at the province level. The PPIT environmental safeguards focal point will undertake joint site visits with subproject Supervision Staff and Contractors to review implementation of ECC and GRM and report issues to PGT and LIC. PPIT will co-ordinate environmental quality monitoring with PONRE and invite PONRE to join site visits and ADB loan review missions.

100. **Loan Implementation Consultants.** The LIC will assist the executing agency (i.e. the PGT within DOI), the implementing agency (i.e. PAFO) and the other project stakeholders in the design and construction of the subproject. For this reason, the Program Governance Team will contract a LIC with two environmental specialists (9 months International Environment Specialist and 17 months National Environmental Specialist)- See PAM for detailed ToRs for LIC Environmental Specialists (LIC-ES) to support subproject designs and the preparation of IEE and for the supporting and monitoring of the ECC during subproject implementation.

101. The environmental safeguard consultants in the LIC will train and support PONRE and DONRE staff with monitoring visits and preparation of monthly and quarterly safeguard reports that will be submitted to the Vice Governor, and the EA via the PGT in DOI. The LIC will support the PGT to prepare a summary of safeguards and GRM implementation to be included in the

quarterly project progress reports to be submitted to ADB. The LIC will support PGT to prepare semi-annual integrated safeguard reports to be submitted to ADB. These reports will include details of issues raised and resolved through the GRM during the reporting period. The semi-annual integrated safeguards monitoring report will be disclosed on ADB website once approved.

102. During the design and preparation phase, the LIC environmental specialists will work with the WUG, PAFO and DAFO and the contractors for the subproject, to ensure the required environmental mitigation measures are incorporated into the final engineering designs documents. During the construction period, they must work with the subproject implementation partners to ensure that all of the environmental management and mitigation measures are fully complied with. The LIC Environment Specialists will provide safeguards and GRM capacity development training for PGT, PPIT, LIC, Contractors and GRM focal points on ECC mitigation and monitoring measures, templates for environmental monitoring and report.

103. **Contractors and Subcontractors.** All contract documents must include the ECC and an environment section in the terms of reference for bidders, and environmental contract clauses for contractors that include special conditions for the protection of the physical, biological and socio-economic environments. These will underpin the obligations towards the environment that must be upheld by all contractors. There is a need to ensure that contractors, as the stakeholders with the shortest-term involvement in the subproject, do not give rise to long term liabilities for the subproject owners and other stakeholders through reckless practices.

104. While the contractors themselves must fulfil their environmental responsibilities, in most cases success in this respect requires strict management and supervision of the contractor during site works: this is the responsibility of PAFO. Because of the competitive bidding process and the emphasis on engineering works, there is often a tendency for environmental safeguards to be delayed by contractors in the hope that costs can be saved and overlooked by management staff as being of lower importance than the primary functional infrastructure. This must not be allowed to happen, or it will mean that the subproject and therefore the overall SRIWSM is non-compliant with respect to both government and ADB safeguards.

105. The Contractor will be required to designate an environmental health and safety (EHS) Officer to supervise and train workers on occupational and community health and safety practices and to monitor and report on implementation of ECC and corrective actions. A GRM focal point/community liaison officer should also be designated to ensure public disclosure of planned construction to affected persons and monitoring and reporting on GRM. Each works Contractor EHS Officer will prepare a monthly report on ECC and GRM implementation for submission to PPIT, PGT and LIC.

106. The construction supervision consultants (CSC) will be responsible for day to day monitoring of implementation of health and safety and ECC requirements and issuing instructions for corrective actions, as needed.

107. ADB will visit project sites and review project performance against the ECC and legal agreements and as documented in periodic environment monitoring reports submitted by the PGT. If any of the safeguard requirements that are covenanted in the legal agreements are found not to be satisfactorily met, ADB will require the PGT to develop and implement an appropriate corrective action plan (CAP) agreed upon with ADB. If unanticipated environmental impacts become apparent during project implementation, ADB will require the PGT with support of LIC ES to (i) assess the significance of such unanticipated impacts; (ii) evaluate the options available to address them; and (iii) update the ECC.

## IX. ENVIRONMENTAL MANAGEMENT AND MONITORING MATRIX

### A. Introduction

108. The matrix on the following pages forms the practical management tool of the Code of Conduct. It lists the environmental impacts expected to be experienced on the Nam Phieng Subproject, and the typical mitigation measures that can be used to avoid, minimise or restore the effects of these impacts. The division of responsibilities between different agencies during the planning, construction and subsequent operation phases are given in simplified tables for the various sections of the PAFO (Appendix 1), the contractor (Appendix 2) and the Water User Group (Appendix 3).

109. The standards against which compliance is to be monitored are given in Appendix 4. These are based on the Lao PDR National Environmental Standards (2017), as well as on project- specific guidelines.

### B. Subproject Construction Phase during Project implementation

110. Environmental mitigation in the construction phase is principally the responsibility of the contractor, managed by the Provincial Project Implementation Team as the provincial project implementing agency, supported by the DAFO and the Loan Implementation Consultant. The Contractor EHS Officer will monitor implementation of ECC and will submit monthly reports on implementation and any required corrective actions throughout construction to PPIT/PGT and LIC. The EHS officer will co-ordinate with the community regularly to ensure that any issues/grievances are resolved and reported in the monthly reports.

**Table 2: Construction Phase Environmental Management and Monitoring**

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.00	Environmental damage of any form results from the poor understanding of subproject requirements by the contractor and subcontractors.	<ol style="list-style-type: none"> <li>1. EHS Officer/GRM focal point to ensure details of subproject GRM entry point contacts are disclosed at camp, sites and affected villages.</li> <li>2. EHS Officer to induct/train workers on occupational and community health and safety practices</li> <li>3. GRM focal points/community liaison officers to carry out regular consultation with affected persons.</li> </ol>	Contractor, PPIT Before mobilisation and as required eg. whenever the contractor mobilises a new subcontractor.	Programme Governance Unit in DOI. As per the timings given for implementation.
		1.		

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.01	(a) Release of silt from excavations and earthworks during construction.	<ol style="list-style-type: none"> <li data-bbox="532 317 862 506">2. The removal of vegetation and creation of bare surfaces must be minimised to essential areas only.</li> <li data-bbox="532 516 862 716">3. Bio-engineering surface protection must be planted on all bare earthworks during the months of May to July.</li> </ol>	Contractor during the subproject construction period.	<p>PPIT construction supervision.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.02	Temporary closure of irrigation systems during construction.	<ol style="list-style-type: none"> <li data-bbox="532 716 862 1041">1. Contractors must provide a plan in advance to provide irrigation water into existing supply channels, which must be approved by the project implementing agency and the Water User Group.</li> <li data-bbox="532 1041 862 1262">2. If it is not possible to avoid temporary closure, then full and fair compensation is to be paid for loss of crops as a consequence.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li data-bbox="899 884 1154 978">1. Before allowing the contractor to commence work.</li> <li data-bbox="899 978 1154 1104">2. Throughout the subproject construction period.</li> </ol>	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.03	Disposal of soil from excavations and cleaning irrigation canals.	<ol style="list-style-type: none"> <li data-bbox="532 1262 862 1388">1. Soil from excavations should be re-used in designs wherever possible.</li> <li data-bbox="532 1388 862 1745">2. Where soil is excess to engineering requirements and is treated as spoil, it must be disposed of in the nearest available approved location, and stabilised and protected from rainfall using bio-engineering measures.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li data-bbox="899 1440 1154 1566">1. Throughout the subproject construction period.</li> <li data-bbox="899 1566 1154 1724">2. Before issuing the contractor's certificate of substantial completion.</li> <li data-bbox="899 1724 1154 1789">3. Before returning retention monies.</li> </ol>	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.04	Release of noxious gases into the atmosphere.	<ol style="list-style-type: none"> <li>1. Vehicles and machines must be in a good condition and serviced regularly, to ensure minimal emissions.</li> <li>2. All vehicles and machines must comply with the Lao PDR emissions standards.</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant. Throughout the subproject construction period.	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.05	Noise nuisance from construction activities.	<ol style="list-style-type: none"> <li>1. Contractors must not exceed statutory noise levels at any time.</li> <li>2. Work sites within 500 metres of habitation: (a) must not operate during the hours of darkness or on holidays; and (b) must have noise-abatement measures installed for other periods.</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant. Throughout the subproject construction period.	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.06	Temporary use of land for construction affects livelihoods or leaves it damaged.	<ol style="list-style-type: none"> <li>1. Land for use by any contractor or subcontractor must be agreed by both the PPIT and the local community authority before the contractor may have access.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before work is permitted to start.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>



No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.07	Influx of temporary labour disrupts local communities.	1. Contractors and subcontractors are required to use the maximum local labour possible.	Contractor, managed by the PPIT and Loan Implementation Consultant. 1. Throughout the subproject construction period.	PPIT throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.
1.08	Operation of construction machines affects both workers and local society.	1. The noise and dust reduction measures adhered to. 2. Safety measures for machine operation must be defined and approved by the project implementing agency. 3. Machine operators and workers must be trained and certificated in the safe use of machines.	Contractor, managed by the PPIT and Loan Implementation Consultant. 1. Before work is permitted to start. 2. Throughout the subproject construction period.	PPIT throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.

1.09	Pollution by hydrocarbons from construction plant.	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of hydrocarbons, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. Fuel and oil must be transported in properly designed vehicles meeting national standards.</li> <li>3. Fuel and oil must be stored at least 50 metres from a water body, in covered and bunded locations, and dispensed under strict controls.</li> <li>4. Vehicle and machine parking and service areas must have impermeable surfaces and the outlet drains must be fitted with oil traps.</li> <li>5. Contractors must have spill clean-up equipment on site, and persons always present who know when and how to use it.</li> <li>6. The contractor must have a land restoration plan that includes hydrocarbon facilities, which must have been implemented to the satisfaction of both the project implementing agency and the landowner before the contractor's final bill may be paid.</li> <li>7. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to mobilise to site.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
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No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.10	Pollution by wastewater from camps and other work sites.	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of wastewater, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. "Black" wastewater from sanitation facilities must be led to a properly constructed septic tank and soakaway.</li> <li>3. "Grey" wastewater from washing and cooking facilities must be led to a septic tank or to a specially built reed bed filtration system.</li> <li>4. Oil-contaminated water from workshops and fuel stores must be collected and taken to an approved municipal waste management facility.</li> <li>5. The contractor must have a land restoration plan that includes wastewater facilities, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> <li>6. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to mobilise to site.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.11	Pollution from solid waste materials.	<ol style="list-style-type: none"> <li>1. Solid waste must be recycled wherever possible.</li> <li>2. Non-recyclable solid waste must be sent to an official landfill site.</li> <li>3. Open burning of solid waste is prohibited</li> <li>4. The contractor must have a land restoration plan that includes solid waste, which must have been completed to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Throughout the subproject construction period.</li> <li>2. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.</p>
1.12	Injuries to workers and others.	<ol style="list-style-type: none"> <li>1. Work sites must be clearly demarcated using barrier tape and all non-project personnel excluded.</li> <li>2. All staff, workers and visitors to construction sites must be issued with appropriate personal protective equipment.</li> <li>3. All staff, workers and visitors to construction sites must be briefed on safe working procedures for that site.</li> <li>4. Every construction site must have a first aid kit and at least two persons always present who are trained and competent to use it.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to commence work.</li> <li>2. Throughout the subproject construction period.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.13	Covid-19 prevention for joining team	<ol style="list-style-type: none"> <li>1. All site engineers / labours must have enough vaccinated as recommended by the nation</li> <li>2. Self-quarantine / isolation for at least 14 days before working</li> <li>3. Take covid-19 at least 2 times (the person come from risky areas) in prior to start working and staying at the site/camp</li> <li>4. Develop or convene a joint occupational safety and health committee with members representing the employer and workers.</li> <li>5. Train team members on the basic principles for the formulation and implementation of occupational safety and health preventive and control measures</li> <li>6. Develop and communicate a work plan on safe working for COVID-19. Such plan should be fully aligned with any government regulations and guidelines on COVID-19 prevention and control, or in the absence thereof, with international good practice guidelines as may be updated from time to time.</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.14	Risk assessment during the Covid-19 pandemic to decide when to	<ol style="list-style-type: none"> <li>1. Undertake a risk assessment to determine the</li> </ol>	Contractor, managed by the PPIT and Loan	PPIT environmental section. Regularly throughout

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
	work, who works and how	preventive and control measures 2. Ensure preventative measures are in place before resuming or beginning construction work	Implementation Consultant	subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.15	Covid-19 prevention (Regularly clean and disinfect)	1. Increase the frequency of cleaning and disinfection, in particular heavily trafficked areas and common areas, including work camps. 2. All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal areas are wiped down at least twice a day with a disinfectant. 3. Discourage the sharing of items such as cups, glasses, plates, tools	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.16	Promote personal Hygiene- Covid-19 prevention	1. Provide workers with the conditions and means necessary for frequent 2. hand washing (soap, water or alcohol gel) with a posted hand washing protocol at site entries, exits, bathrooms, communal areas, offices, and any other areas with commonly touched surfaces. 3. Inform workers of the need to avoid physical contact when greeting, and avoid	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		<p>touching eyes, nose and mouth</p> <p>4. Inform workers of the need to cover the mouth and nose with a disposable handkerchief when coughing or sneezing or the crook of their arm.</p> <p>5. Dispose of tissues in a lined and covered waste bin and wash hands afterwards</p>		end of Covid-19 pandemic.
1.17	Health surveillance and insurance-Covid-19 prevention	<p>1. Before entering the site, staff and visitors must confirm that they are not currently exhibiting flu-like symptoms.</p> <p>2. Monitor the health status of workers, develop protocols for cases of suspected and confirmed COVID-19. The protocol will state that:</p> <ul style="list-style-type: none"> <li>workers with symptoms or confirmed cases must be isolated within the construction camp or stay at home for 7 days after symptoms started.</li> <li>If symptoms persist after 7 days the person must isolate until the symptoms stop</li> <li>People who have been in close contact with the person with confirmed COVID-19 be quarantined for 14 days</li> </ul> <p>3. All workers in quarantine or isolation must be</p>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		<p>provided with adequate food, water, medical assistance and sanitation.</p> <p>4. Identify workers who have had close contact with people infected with COVID-19 and follow national medical guidance.</p> <p>5. Communicate confirmed cases of COVID-19 infection to the appropriate authorities.</p> <p>6. All workers should be provided with health insurance that includes COVID-19 treatment</p>		
1.18	Review emergency preparedness plans- Covid-19 prevention	1. Develop an emergency plan adapted to COVID-19 and regularly review it.	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.19	Camp location- Covid-19 prevention	<p>1. Not in area liable to flooding, landslide or other natural disaster</p> <p>2. Not in area affected by construction dust, noise, sewage or other pollution</p> <p>3. Not in a residential area</p>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout</p>



No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.20	Minimum housing standards-Covid-19 prevention	<ol style="list-style-type: none"> <li>1. a separate bed for each worker</li> <li>2. beds should not be arranged in tiers of more than two;</li> <li>3. separate accommodation of the sexes or to accommodate couples</li> <li>4. adequate natural light during the daytime and adequate artificial light</li> <li>5. adequate ventilation to ensure sufficient movement of air</li> <li>6. adequate supply of safe potable water</li> <li>7. adequate sanitary facilities (see below);</li> <li>8. adequate drainage</li> <li>9. adequate furniture for each worker to secure his or her belongings, such as a locker.</li> <li>10. common dining rooms, canteens or mess rooms, located away from the sleeping areas</li> <li>11. appropriately situated and furnished laundry facilities</li> <li>12. reasonable access to plug sockets for charging telephones and other devices</li> <li>13. rest and recreation rooms and health facilities, where not available in the community</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>subproject construction period till the end of Covid-19 pandemic. PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.21	Minimum accommodation sizes - Covid-19 prevention	<p>Sleeping space</p> <ol style="list-style-type: none"> <li>1. inside dimensions over 198 centimeters</li> </ol>	Contractor, managed by the PPIT and Loan	PPIT environmental section. Regularly throughout

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		by 80 centimeters; Sleeping room: 2. headroom of over 203 centimeters allowing full free movement 3. Beds minimum 2m apart for COVID-19 risk management	Implementation Consultant	subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.22	Sanitation facilities - Covid-19 prevention	1. One toilet, one tap / basin, one toilet for every 6 people 2. Convenient location to accommodation 3. Provision of soap 4. Separate facilities for men and women 5. Ventilation to open air 6. Fresh cold running water 7. Clean and hygienic 8. Septic tank / sewage treatment facility, or pit latrines located at least 200m from surface waters, and in areas of suitable soil profiles and above the groundwater levels	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.23	Health and Safety within worker accommodation - Covid-19 prevention	1. Separate area for sick workers to prevent transmission of disease 2. Smoke detector in sleeping area 3. Fire safety throughout accommodation such as fire extinguishers, fire alarms, fire blankets 4. Worker training in fire prevention and procedures 5. Fire exit sign, adequate means of escape and clearly maintained exit	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.24	Inspection - Covid-19 prevention	<ul style="list-style-type: none"> <li>6. Security lighting within camp and for sanitation block and lighting for route from sleeping area to sanitation block.</li> <li>7. Electrical cables to be in safe condition, elevated and not in areas liable to flood</li> <li>1. 2 weekly inspection to inspect for cleanliness, state of repair of building, accommodation and fire equipment.</li> <li>2. Record inspection results and retain for review</li> </ul>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>

### C. Subproject Operation Period following Project implementation

111. Environmental mitigation in the operation period is principally the responsibility of the Water User Group and the Provincial Irrigation Section in the PAFO, supported by other sections of the PAFO and the DAFO.

**Table 3: Operation Period Environmental Management and Monitoring**

<b>No.</b>	<b>Potential Impact</b>	<b>Safeguards or Mitigation</b>	<b>Responsibility to Implement and Timing</b>	<b>Monitoring, Checking and Timing</b>
2.01	Erosion of canal banks, either from flood surges or normal flows.	<ol style="list-style-type: none"> <li>1. All flood protection works must be maintained as per the design of the subproject, or any subsequent engineering works.</li> <li>2. Any flood damage must be reviewed and appropriate measures designed for resolution.</li> <li>3. Occasional minor flood damage should normally be resolved by using appropriate measures.</li> <li>4. The use of civil engineering structures (i.e. concrete or gabion works) may be required in the event of serious damage from exceptional floods.</li> </ol>	Water User Group, calling on the PIS – PAFO for advice if damage is severe. If necessary, specialist expertise should be requested from the central Department of Irrigation. Annually.	PAFO and PONRE. Annually.

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## **Appendix 1. Responsibilities of the Provincial Agriculture and Forest Office**

### **Provincial Project Implementation Team of the PAFO – Construction Period**

<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.02	<ol style="list-style-type: none"> <li>1. At a pre-mobilisation site meeting, the contractor must demonstrate a full understanding of the requirements of the Code of Conduct.</li> <li>2. All of the sub-plans listed below must be created, reviewed, improved if necessary and accepted for approval.</li> <li>3. The contractor must demonstrate that he is fully responsible for all subcontractors' adherence to the provisions of the Code of Conduct, and that he has formally ensured this.</li> </ol>	To ensure that environmental damage of any form does not result from the poor understanding of subproject requirements by the contractor and subcontractors.
1.17	<ol style="list-style-type: none"> <li>1. Instructions on managing the infrastructure must be provided to the end users before handover.</li> <li>2. The operating instructions must be explained to the Water User Group.</li> <li>3. Before handover, the operating instructions must be finalised and the Code of Conduct requirements included.</li> </ol>	To ensure that subsequent users fully understand how to manage the subproject works.

### **Provincial Irrigation Section of the PAFO – Operation Period**

<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
2.01	<ol style="list-style-type: none"> <li>1. Once scheme operation commences, the gauged river flows and water offtake volumes must be reassessed. These, plus any complaints from downstream users, must be used to recalculate the allowable offtake.</li> <li>2. The scheme must then be revised accordingly.</li> </ol>	To ensure that there is no disruption of downstream hydrological flows due to offtake from river.
2.03	<ol style="list-style-type: none"> <li>1. If these impacts occur, then it shows that the assumptions of water flow made during subproject design were wrong. This is likely to be due to a lack of flow data at design stage.</li> <li>2. The minimum flow release must be recalculated, based on user needs and the latest data on river flow.</li> <li>3. Water use by the subproject scheme must be reviewed against what is actually available.</li> <li>4. A revised scheme management plan must be introduced, implemented, monitored and adjusted until it resolves the problem.</li> </ol>	So that the extraction of water from a river does not cause a decline or loss of aquatic biodiversity, or leave downstream users short, if the subproject irrigation scheme requires more water than is available.

**PAFO and DAFO Watershed Management, Agriculture and Forestry Teams –  
Operation Period**

<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
2.02	<ol style="list-style-type: none"> <li>1. The catchment land use plan, preparations for which should have been initiated before project implementation should be continued indefinitely to ensure that the scheme is safeguarded throughout its operational life. The plan's primary objective is upstream catchment protection to ensure that the subproject irrigation scheme is safeguarded in terms of water supply and limited sediment supply.</li> <li>2. Arrangements for implementation of the plan must be maintained.</li> </ol>	<p>So that upstream land uses do not cause a decline in the quality and quantity of water available for the irrigation scheme.</p>

## Appendix 2. Responsibilities of the Contractor

The subproject civil works contractor is responsible for the following actions during the construction phase.

### Contractor – Construction Phase

No.	What you Must Do	Why You Must Do It
1.00	<ol style="list-style-type: none"> <li>1. Appoint qualified Environmental, Health and Safety Officer to manage site safety and implementation of ECC and GRM requirements.</li> <li>2. EHS Officer to provide induction, training and toolbox talks for all Contractor staff and other site visitors.</li> <li>3. EHS Officer to liaise with affected persons and local community</li> <li>4. EHS Officer to implement and monitor any required corrective actions and resolution of issues raised through the GRM.</li> <li>5. EHS Officer to report monthly to PPIT on implementation of ECC and GRM.</li> </ol>	To ensure Contractor fulfils their contractual requirements to: provide and maintain a safe and hygienic working environment; implement, monitor and report on subproject ECC and GRM requirements effectively.
1.01	<ol style="list-style-type: none"> <li>6. The removal of vegetation and creation of bare surfaces must be minimised to essential areas only.</li> <li>7. Vegetation clearance and earthworks may only be undertaken during the months of October to April.</li> <li>8. Temporary sediment settling ponds built using strong stone or timber check dams (not bamboo or fabric silt fences) must be constructed to trap sediment from all earthworks that have unprotected surfaces at any time during the months of April to October inclusive.</li> <li>9. Borrow areas, camp sites, temporary access tracks etc. must be fully rehabilitated back to a condition that is fully protected against soil erosion.</li> <li>10. Bio-engineering surface protection must be planted on all bare earthworks during the months of May to July.</li> </ol>	To avoid water course pollution from releases of silt from excavations and earthworks during construction, and from poorly finished earthworks following construction.
1.03	<ol style="list-style-type: none"> <li>1. No tree over 200 mm diameter at breast height (1.5 metres above the ground) may be cleared unless the design drawings specifically require it.</li> <li>2. The contractor's site clearance plan must be limited to the agreed work site boundaries and must be approved by the PPIT's environmental representative before any clearance may be commenced.</li> </ol>	So that the clearance of vegetation does not lead to the unnecessary removal of trees and other plants.
1.04	<ol style="list-style-type: none"> <li>1. Contractors must provide a plan in advance to provide irrigation water into existing supply channels, which must be approved by the project implementing agency and the Water User Group.</li> <li>2. If it is not possible to avoid temporary closure, then full and fair compensation is to be paid for loss of crops as a consequence.</li> </ol>	To avoid temporary closures of irrigation systems during construction.



### Contractor – Construction Phase

No.	What you Must Do	Why You Must Do It
1.05	<ol style="list-style-type: none"> <li>1. Soil from excavations should be re-used in designs wherever possible.</li> <li>2. Where soil is excess to engineering requirements and is treated as spoil, it must be disposed of in the nearest available approved location, and stabilised and protected from rainfall using bio-engineering measures.</li> </ol>	To ensure the safe disposal of soil from excavations such as irrigation canals.
1.06	<ol style="list-style-type: none"> <li>1. Earthworks must be halted during periods of strong winds.</li> <li>2. Heavily used access tracks must be sprayed with water during dry periods.</li> <li>3. On all unmetalled surfaces, construction traffic must be limited to 30 kmh within 250 metres of habitation and 80 kmh elsewhere.</li> <li>4. Loads of dust-making materials must be covered.</li> <li>5. Crushers must be fitted with water sprays to prevent dust emissions.</li> </ol>	To minimise the release of dust into the atmosphere from excavations and other construction activities.
1.07	<ol style="list-style-type: none"> <li>1. Vehicles and machines must be in a good condition and serviced regularly, to ensure minimal emissions.</li> <li>2. All vehicles and machines must comply with the Lao PDR emissions standards.</li> </ol>	To minimise the release of noxious gases into the atmosphere.
1.08	<ol style="list-style-type: none"> <li>1. Contractors must not exceed statutory noise levels at any time.</li> <li>2. Work sites within 500 metres of habitation: (a) must not operate during the hours of darkness or on holidays; and (b) must have noise-abatement measures installed for other periods.</li> </ol>	To minimise noise nuisance from construction activities.
1.09	<ol style="list-style-type: none"> <li>1. Land for use by any contractor or subcontractor must be agreed by both the PPIT and the local community authority before the contractor may have access.</li> <li>2. Full and fair compensation is to be paid for loss of crops or other assets before the contractor may have access to the land.</li> <li>3. The contractor must have a land restoration plan, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> </ol>	To ensure that the temporary use of land for construction does not affect livelihoods or leave it damaged.
1.10	<ol style="list-style-type: none"> <li>1. Contractors and subcontractors are required to use the maximum local labour possible.</li> <li>2. If a significant number of staff and workers (i.e. more than 20) are to be brought into the subproject site, then the contractor must provide a management plan and code of conduct for the staff and workers, that is approved by the local community authority.</li> </ol>	To minimise the disruption to local communities due to an influx of temporary labour.

### Contractor – Construction Phase

No.	What you Must Do	Why You Must Do It
1.11	<ol style="list-style-type: none"> <li>1. The noise and dust reduction measures listed above must be adhered to.</li> <li>2. Safety measures for machine operation must be defined and approved by the project implementing agency.</li> <li>3. Machine operators and workers must be trained and certificated in the safe use of machines.</li> </ol>	To minimise the effects on both workers and local society from the operation of construction machines.
1.12	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of hydrocarbons, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. Fuel and oil must be transported in properly designed vehicles meeting national standards.</li> <li>3. Fuel and oil must be stored at least 50 metres from a water body, in covered and bunded locations, and dispensed under strict controls.</li> <li>4. Vehicle and machine parking and service areas must have impermeable surfaces and the outlet drains must be fitted with oil traps.</li> <li>5. Contractors must have spill clean-up equipment on site, and persons always present who know when and how to use it.</li> <li>6. The contractor must have a land restoration plan that includes hydrocarbon facilities, which must have been implemented to the satisfaction of both the project implementing agency and the landowner before the contractor's final bill may be paid.</li> <li>7. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	

### Contractor – Construction Phase

No.	What you Must Do	Why You Must Do It
1.13	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of wastewater, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. “Black” wastewater from sanitation facilities must be led to a properly constructed septic tank and soakaway.</li> <li>3. “Grey” wastewater from washing and cooking facilities must be led to a septic tank or to a specially built reed bed filtration system.</li> <li>4. Oil-contaminated water from workshops and fuel stores must be collected and taken to an approved municipal waste management facility.</li> <li>5. The contractor must have a land restoration plan that includes wastewater facilities, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor’s final bill may be paid.</li> <li>6. Any subcontractor must comply with the same rules, at the contractor’s liability.</li> </ol>	<p>To avoid the pollution from construction site wastewater, from camps and other work sites.</p>
1.14	<ol style="list-style-type: none"> <li>1. Solid waste must be recycled wherever possible.</li> <li>2. Non-recyclable solid waste must be sent to an official landfill site.</li> <li>3. Open burning of solid waste is prohibited</li> <li>4. The contractor must have a land restoration plan that includes solid waste, which must have been completed to the satisfaction of both the PPIT and the landowner before the contractor’s final bill may be paid.</li> </ol>	<p>To avoid pollution from solid waste materials.</p>
1.15	<ol style="list-style-type: none"> <li>1. Work sites must be clearly demarcated using barrier tape and all non-project personnel excluded.</li> <li>2. All staff, workers and visitors to construction sites must be issued with appropriate personal protective equipment.</li> <li>3. All staff, workers and visitors to construction sites must be briefed on safe working procedures for that site.</li> <li>4. Every construction site must have a first aid kit and at least two persons always present who are trained and competent to use it.</li> </ol>	<p>To avoid injuries to workers and others.</p>
1.16	<ol style="list-style-type: none"> <li>1. All small cultural sites (such as small shrines and graves) must be protected by the contractor during works periods.</li> <li>2. A plan for the protection of cultural sites must be approved by the PPIT.</li> <li>3. Once construction is complete the surrounding of such sites must be restored to their pre-construction condition.</li> </ol>	<p>To minimise the disruption of cultural sites.</p>

**Contractor – Construction Phase**

<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.17	<ol style="list-style-type: none"><li>1. Instructions on managing the infrastructure must be provided to the end users before handover.</li><li>2. The operating instructions must be explained to the Water User Group.</li><li>3. Before handover, the operating instructions must be finalised and the Code of Conduct requirements included.</li></ol>	So that subsequent users fully understand how to manage the subproject infrastructure.

### Appendix 3. Responsibilities of the Water User Group – Operation Period

Water User Group – Operation Period		
No.	What you Must Do	Why You Must Do It
2.04	<ol style="list-style-type: none"> <li>1. All flood protection works must be maintained as per the design of the subproject, or any subsequent engineering works.</li> <li>2. Any flood damage must be reviewed and appropriate measures designed for resolution.</li> <li>3. Occasional minor flood damage should normally be resolved by using appropriate bio-engineering measures.</li> <li>4. The use of civil engineering structures (i.e. concrete or gabion works) may be required in the event of serious damage from exceptional floods.</li> </ol>	To prevent flood damage and the erosion of canal banks, either from flood surges or normal flows.

## **Appendix 4. SRIWSM Project Environmental Guidelines**

The Government of Lao PDR National Environmental Standards (2017) will be used as the reference points for the areas that they cover. The list below gives the additional guideline standards that must be followed on all SRIWSM subprojects. If new standards are gazetted by the government during the project implementation period, then they shall take precedence if they are stricter.

### **Soil**

- All bare surfaces (including roadsides and drains but excluding road running surfaces) shall be protected using bio-engineering measures that shall be implemented during the months of May to July each year. The SRIWSM bio-engineering guidelines will be followed.
- Agrichemicals shall only be used that are not on the Government of Lao PDR lists of prohibited substances under the Regulation on the Control of Pesticides in Lao PDR (Regulation No 2860/MAF, 11 June 2010) and the Decree on Pesticide Management: (Decree No. 258/GOV, 24 August 2017).

### **Vegetation**

- No tree of more than 200 mm diameter at breast height (1.5 metres above the ground) shall be cleared unless the design drawings specifically require it.
- Other vegetation shall be cleared only within agreed site boundaries or in connection with agreed subproject activities.
- Fire shall not be used as a means of clearing vegetation or for the disposal of cleared vegetation.

### **Water**

- The National Environmental Standard (2017) for water quality shall apply in every case.
- A vegetated band of at least 50 metres should be maintained between any areas of disturbance and any water course. Exceptions are made only where irrigation headworks and road crossings must necessarily be closer.

### **Animals**

- All subproject staff, workers and beneficiaries shall be issued with a list of rare, threatened and endangered species in the area around the subproject, which shall not be hunted, traded or eaten. Such a list shall be based on the regional data held by the International Union for the Conservation of Nature (IUCN) Red List.

### **Air**

- The National Environmental Standard (2017) for ambient air quality shall apply in every case.
- On all unmetalled surfaces, construction traffic shall be limited to 30 kmh within 250 metres of habitation and 80 kmh elsewhere.
- Dust emissions shall be minimised by spraying water during dry weather and using other site-specific measures.
- Vehicle and machine engines shall be stopped when stationary.

### **Storage**

- No storage of oil, fuel or chemicals is permitted within 50 metres of a water body.
- All stores shall be covered with full rain protection.
- Oil and fuel stores shall have impermeable bunds capable of retaining 150 percent of the

stored volume indefinitely.

#### **Hazardous Materials**

- Fuels, oils, cement, fertilisers and pesticides shall be included in the category of hazardous materials.
- All hazardous materials shall be stored in secure compounds, with rain protection and bunding in case of spills and leakages.
- Every site where hazardous materials are stored or used shall have spill clean-up equipment and staff trained in its use.
- Fuel handling areas shall be bunded and all drainage water directed through oil traps. Sediment from oil traps shall be sent for disposal at a waste disposal facility authorised for the handling of hydrocarbon waste.

#### **Solid Waste Management**

- All work sites shall be provided with sanitary facilities. These may be pit latrines or water-based toilets with septic tanks and subsurface soakaways.
- Solid waste shall be recycled where facilities exist.
- Where solid waste cannot be recycled, it shall be sent to an approved landfill site.
- Fire shall not be used as a means of disposing of waste.

#### **Society**

- The National Environmental Standard (2017) for noise and vibrations shall apply in every case.
- There shall be no night-time working (i.e. between sunset and sunrise) within 500 metres of habitation.

#### **Construction Site Safety**

- All construction sites shall be delineated with barrier tape and non-project personnel excluded at all times.
- All staff and workers shall wear appropriate personal protective equipment (PPE) at all times that they are on a work site.
- The minimum for all personnel is: reflective vest; safety helmet; and safety boots.
- Other PPE such as gloves, eye protection, ear protection, etc. shall be used according to the work performed or underway nearby in the site.

# Initial Environmental Examination

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Project Number: 50236-002  
Sept 2021

Lao PDR: Sustainable Rural Infrastructure and  
Watershed Management Sector Project

Annex A: Environmental Code of  
Conduct

Nam Phieng Irrigation Subproject  
Phieng District  
Xayaboury Province

Prepared by the Ministry of Agriculture and Forestry for the Asian Development Bank.



## CURRENCY EQUIVALENTS

(as of 5 April 2019)

Currency Unit	–	Kip (KN)
KN1.00	=	\$0.000116
\$1.00	=	KN8,600

## ABBREVIATIONS

ADB	:	Asian Development Bank
COL	:	Concessional OCR lending
DAFO	:	District Agriculture and Forestry Office
DALAM	:	Department of Agricultural Land Management
DDMCC	:	Department of Disaster Management and Climate Change
EIA	:	Environment Impact Assessment
ERP	:	Emissions Reduction Program
FAO	:	Food and Agriculture Organization (of the United Nations)
GCF	:	Green Climate Fund
GIZ	:	Deutsche Gesellschaft für Internationale Zusammenarbeit (German International Cooperation Agency)
IEE	:	Initial Environment Examination
IUCN	:	International Union for the Conservation of Nature
IWMI	:	International Water Management Institute
LIC	:	Loan Implementation Consultant
MAF	:	Ministry of Agriculture and Forestry
MONRE	:	Ministry of Natural Resources and Environment
NGO	:	Non-governmental Organisation
NRI	:	Northern Rural Infrastructure Development Project
NSEDP	:	National Socio-Economic Development Plan
NTFP	:	non-timber forest product
PAFO	:	Provincial Agriculture and Forestry Office
PDR	:	People's Democratic Republic (of Laos)
PGT	:	Program Governance Team
PLUP	:	participatory land use planning
PPIT	:	Provincial Project Implementation Team
PONRE	:	Provincial Office of Natural Resources and Environment
PRI	:	productive rural infrastructure
RSP	:	representative subproject
SRIWSM	:	Sustainable Rural Infrastructure and Watershed Management
TRTA	:	Transaction Technical Assistance
WUG	:	water user group

## **GLOSSARY**

Catchment	In its totality a catchment is equivalent to a watershed, however a watershed may comprise of micro-catchments and sub-catchments. In this document a catchment refers to a subset of the larger watershed.
Watershed	A topographically delineated area from which rainwater drains as surface run-off via a river or stream to a common outlet point (e.g. a large river, lake or the sea).
Watershed management	<p>Securing watershed functions in a sustainable manner. Broadly these functions include:</p> <ul style="list-style-type: none"><li>➤ Ecological function: availability of sufficient good quality water over time, space; erosion control, soil fertility, biodiversity, clean air, carbon sequestration;</li><li>➤ Economic function: sufficient natural resource products like food, fuel wood, timber, water, fish, energy required for basic needs of the local population; income generating opportunities;</li><li>➤ Social function: maintenance of social structures; protection and development of knowledge and lifestyle arrangements; maintenance and revitalisation of cultural identity and values, recreational facilities.</li></ul>

## **NOTE**

- (i) In this report, “\$” refers to US dollars unless otherwise stated.

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<b>CONTENTS</b>		<b>Page</b>
I.	INTRODUCTION	1
	A. Nam Phieng Subproject	1
	B. Purpose of the Environmental Code of Conduct	1
II.	SUBPROJECT IMPLEMENTATION RESPONSIBILITIES	1
	A. Provincial Project Implementation Team	1
	B. Institutional arrangements for implementation of environmental safeguards	7
III.	ENVIRONMENTAL MANAGEMENT AND MONITORING MATRIX	9
	A. Introduction	9
	B. Subproject Construction Phase during Project implementation	9
	C. Subproject Operation Period following Project implementation	23

## **List of Appendixes**

### Reference Documents

Appendix 1. Responsibilities of the Provincial Agriculture and Forest Office

Appendix 2. Responsibilities of the Contractor

Appendix 3. Responsibilities of the Water User Group – Operation Period

Appendix 4. Project Environmental Guidelines

## **I. INTRODUCTION**

### **A. Nam Phieng Subproject**

1. The Nam Phieng Subproject is to support the upgrading of an existing irrigation distribution system serving households in a number of villages. The subproject covers two distinct areas. The productive rural infrastructure (PRI) element will cover the existing Nam Phieng 1 and Nam Phieng 2 command areas, specifically improving various distribution canals leading into and around the command areas. The other part of the subproject is the Nam Phieng catchment above the headworks, where watershed management improvements are being implemented by the Provincial Agriculture and Forestry Office (PAFO) to help safeguard the quality and quantity of the irrigation water supply.

2. The subproject is to be implemented as one of the interventions financed in Xayaboury Province by the Sustainable Rural Infrastructure and Watershed Management - Sector Project (SRIWSM). This project is a joint undertaking of the Government of Lao PDR (the government or GOL) and the Asian Development Bank (ADB).

### **B. Purpose of the Environmental Code of Conduct**

3. This Environmental Code of Conduct has been prepared in compliance with the specified safeguard requirements of the borrower, the Government of Lao PDR (the government), and the main financing organisation, the Asian Development Bank (ADB). It accompanies an Environmental Review (ER) that: (i) provides an overview of the proposed subproject and its purposes; and (ii) makes an evaluation of the likely impacts that will occur to the environment as a result of the proposed subproject activities.

4. This Environmental Code of Conduct outlines the mitigation measures that will be required to ensure that no part of the project causes significant damage to the environment.

5. The Environmental Code of Conduct has been prepared on the basis of the design for the subproject, and its likely effects on the environment, as evaluated in the ER. It defines the anticipated environmental impacts, the measures required to mitigate them, the responsibilities for doing so and the responsibility for monitoring that they have been undertaken effectively at the right time. Following the approval of the ER, this Code of Conduct forms the guiding document to ensure that all necessary environmental safeguards are put in place.

6. Adherence to this Code of Conduct is a condition of the use of ADB financing for the Nam Phieng Subproject. Acceptance of and a commitment to implement the Code of Conduct must form part of the contractual conditions for any physical engineering works under the subproject.

## **II. SUBPROJECT IMPLEMENTATION RESPONSIBILITIES**

### **A. Provincial Project Implementation Team**

7. The executing agency of the SRIWSM is MAF, with support from the IA - Department of Irrigation (DOI). Implementation is decentralised to the Provincial Agriculture and Forestry Offices (PAFO) where implementation activities will be assigned to the respective sections of PAFO, co-ordinated into a Provincial Project Implementation Team (PPIT) for the management of the SRIWSM Project.

8. The executing agency (i.e. MAF) and IA (i.e. DOI) will establish a Program Governance Team (PGT) that would be responsible for: (i) establishing the operational procedures to be used by the PPIT, including planning, budgeting, financial management, procurement, disbursement, contract management, safeguard monitoring and compliance monitoring; (ii) ensuring both government and donor audit requirements are met; (iii) providing capacity building at the provincial level for both PPIT staff and potential contractors; and (iv) providing technical support for advanced engineering designs and project management teams, including the provision of skill mentoring and technical assistance input to procurement and contract management.

9. Government staff are therefore involved in environmental management and monitoring at a number of levels and in two main ministries: MAF for both management and monitoring; and MONRE as delegated to PONRE for monitoring. The capabilities required of staff varies depending on the phase of the subproject, and their level and remit, but the common thread required by all is a sound understanding of the environment and society in the rural hill catchments of the northern provinces, and a particular understanding of current issues in both upland and irrigated agriculture. PONRE staff have the underlying environmental knowledge but often lack the technical expertise to address specific issues. DONRE staff are far less experienced and qualified. The Loan Implementation Consultants – both international and National will provide (i) Project awareness training, (ii) technical training with respect to environmental monitoring systems and techniques that will apply to their specific subproject (most PONRE have only 3 subprojects to monitor), (iii) PONRE staff receive budgetary support for their additional costs on an output basis ie. PAFO will pay for monitoring reports received. In addition, PONRE and DONRE monitoring staff will be supported for regular site visits by the construction supervision staff of PAFO.

10. During the project implementation period, which effectively involves subproject design and construction phases, safeguards are the responsibility of the Vice Governor Office represented by PAFO with support from the PGT within the Department of Irrigation. Environmental safeguards will be assigned through a Memorandum of Understanding (MoU) between the Vice Governor Office, Director of PAFO and Director of PONRE. The Loan Implementation Consultant (LIC) team will include international and national environmental safeguard consultants who will provide additional support. PAFO Project management staff, will work with the construction supervision staff, PONRE and DONRE staff to provide the monthly, quarterly safeguard reports that will be submitted to the Vice Governor, and the EA via the PGT in DOI.

11. At the provincial level, a PAFO will assign overall project management to an existing PAFO Deputy Director General and will implement subprojects. Within each PAFO, the technical staff will be assigned to the PPIT must be able to monitor the implementation of works programs with the supervision role also maintaining both social and environmental checklists for site visits. The submission of safeguard reports to the Vice Governor and to the PGT will trigger a consolidation report from the PGT that will be submitted to ADB twice yearly for review and approval.

12. The project implementation responsibilities as set out in the PAM are provided in Table 1.

**Table 1: Responsibilities Regarding the Environment and Related Safeguards.**

Project organisation	Management Roles and Responsibilities
Ministry of Finance (MOF)	<ul style="list-style-type: none"> <li>• Establish the Project's Advance Account,</li> <li>• Manage direct payments to contractors,</li> <li>• Provide replenishment reports to ADB,</li> <li>• Provide advances to Implementing Agencies Subaccounts,</li> </ul>

Project organisation	Management Roles and Responsibilities
Ministry of Agriculture and Forestry (MAF) - Executing Agency (EA)	<ul style="list-style-type: none"> <li>• Overarching financial control.</li> <li>• The EA will constitute a national steering committee with representatives of MAF, Office of Governor (Implementing Agency – IA) of four northern provinces (FNP), MOF, Ministry of Planning and Investment (MPI) and Ministry of Natural Resources and Environment (MONRE).</li> <li>• Responsible for ensuring loan agreements and covenants and assurances are achieved.</li> <li>• Responsible for internal monitoring of the States' interests.</li> </ul>
National Steering Committee (NSC)	<ul style="list-style-type: none"> <li>• Provide guidance to the IAs and EAs in terms of project scope of work, expected performance standards, remedial action.</li> <li>• Ensure cross sector coordination and integration of work plans</li> <li>• Confirm annual performance.</li> <li>• Membership will include MAF – Minister, Governors of the FNP, Provincial Agriculture and Forestry Offices (PAFO) Director Generals (DG) from each province, and Deputy Director Generals (DDG) of Department of Irrigation (DOI).</li> </ul>
DOI - IA	<ul style="list-style-type: none"> <li>• Support and operate the Program Governance Team and represent the EA in the day to day implementation of the project.</li> <li>• Provide technical support on irrigation and institutional issues.</li> <li>• Consolidate financial and progress reports for the MAF ADB.</li> <li>• Consolidate and quality check all withdrawal applications and replenishment requests to be forwarded to MAF's Department of Planning and Finance (DOPF) for clearance and onward forwarding to MoF.</li> </ul>
MAF's DOPF	<ul style="list-style-type: none"> <li>• Define and validate the project management systems to be applied across the programme to ensure that government and ADB requirements are met.</li> <li>• Verify all subproject draft procurement (including safeguards) documentation prior to be submitted to ADB or publicly advertised.</li> <li>• Undertake a quality control and verification of the quarterly and annual reports that will have document quality control procedures and an endorsement page.</li> <li>• Ensure financial management systems (FMS) are consistent with MAF's requirements.</li> <li>• Ensure that project reporting systems support both Government and ADB requirements.</li> <li>• Provide quality assurance for the replenishment and disbursement documentation to be provided to ADB and MOF.</li> </ul>
Program Governance Team (PGT) within the DOI	<ul style="list-style-type: none"> <li>• Overall program management and coordination of the project</li> <li>• Prepare a code of conduct including accountability of individuals, authority and levels of delegated authority, jurisdiction and mandate limits.</li> <li>• Produce a project management manual, and the supporting templates, guidelines for planning, budgeting, financial accounts, disbursement, procurement, contract management, reporting, safeguards and audit.</li> <li>• Provide the consolidation and quality assurance function with the project for all work planning, budgeting and financial management records, replenishment requests, withdrawal applications that are then forwarded to DOPF.</li> </ul>

Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Conduct assigned procurement of (i) vehicles, (ii) equipment, (iii) loan implementation consultants (LIC), and (iv) other consultants and service providers.</li> <li>• Facilitate the development of provincial contractor awareness and capability.</li> <li>• Provide technical support for setting up project management systems and templates in the Provincial project implementation team (PPIT) and the required capability to operate these systems</li> <li>• Appoint a Gender focal point from MAF' Women Advancement Unit (WAU) to oversee and support the implementation of the gender action plan (GAP).</li> <li>• Undertake safeguard screening of additional subprojects in line with Resettlement and Ethnic Group Development Framework (REGDF) and Environmental Assessment and Review Framework (EARF) to confirm classifications, and that subprojects that would be classified as Category A to be excluded.</li> <li>• Ensure safeguard frameworks (REGDF and EARF) are applied in the screening, selection and assessment of subprojects and preparation of safeguard plans, Resettlement and Ethnic Group Development Plans (REGDPs) and Initial Environmental Examination / Environment Management Plans (IEEs / EMP) at the subproject level, to be reviewed and commented on within 30 working days by ADB.</li> <li>• Monitor implementation of safeguard requirements as set out in the REGDF/REGDPs and IEEs / EMPs/Environmental Code of Conduct (ECC) during subproject implementation.</li> <li>• Ensure that all subproject design reports (SDR) clearly demonstrate dry season water availability for the reliable irrigation whilst ensuring environmental minimum flow is sustained.</li> <li>• Assign two staff to act as safeguards focal points – one for resettlement and social safeguards and one for environmental safeguards, to provide safeguard oversight and input to semi-annual safeguards reports for submission to ADB.</li> </ul>
Provincial Steering Committee (PSC)	<ul style="list-style-type: none"> <li>• Each of the FNPs will establish a PSC chaired by the Governor, participating District Governors, Directors General of PAFO, Finance, Planning and Investment, Public Works and Transport Office (PWTO), Plant Protection Center, and Provincial office of Natural Resources and Environment (PONRE).</li> <li>• Review annual work plans and provide guidance on project scope and performance standards.</li> <li>• Approve annual work plans and receive regular progress reports</li> <li>• Establish operational memorandums of understanding (MOUs) between PAFO, PONRE, and PWTO.</li> </ul>
Provincial Procurement Committee (PPC)	<ul style="list-style-type: none"> <li>• Each of the FNPs will establish a PSC chaired by the Governor and including Provincial representatives.</li> <li>• Manage evaluation bidding documents, conduct scoring and ranking of bids.</li> <li>• Provide recommended procurement actions to PSC and PAFO.</li> </ul>
Provincial Project Implementation Team (within the PAFO)	<ul style="list-style-type: none"> <li>• Each provincial government will form within PAFO a Project Implementation Team (PPIT), aligned to the Provincial Irrigation Section (PIS). The PAFOs will identify implementation focal points in Department of Agriculture and Land Management (DALAM) and</li> </ul>

Project organisation	Management Roles and Responsibilities
	<p>DOF to be seconded into the project management structure of the PPIT to support activities relating to land use planning, catchment management and land registration administration.</p> <ul style="list-style-type: none"> <li>• PAFO will establish a gender focal point from the WAU that will be responsible for ensuring the GAP is implemented and that all stakeholders are fully aware of the GAP and the associated responsibilities</li> <li>• Each PAFO will appoint a safeguards focal point to supervise implementation of safeguard requirements and to co-ordinate project specific grievance redress mechanism and support provincial program safeguards focal point on periodic safeguards monitoring and reporting.</li> <li>• Establish operational systems with staff assigned who have the capacity to maintain the project administration and management systems.</li> <li>• Establish and maintain subproject monitoring and impact assessment using the productive rural infrastructure (PRI) representative subprojects (RSP) as learning sites.</li> <li>• Coordinate the ADB-financed activities and integrate these with the activities of other donor-financed programmes working on watershed management.</li> <li>• Provide quarterly and annual reports and semi-annual safeguards reports according to the templates specified by the PGT.</li> <li>• Ensure subproject REGDPs if any and IEE/EMPs are updated based on detailed engineering design, approved by ADB and disclosed on ADB website prior to contract awards.</li> <li>• Obtain final approval from the PAFO DG in accordance with the Irrigation Law 2014 - (Article 38).</li> <li>• Obtain environmental compliance certificates from the relevant PONREs prior to award of civil works contracts.</li> <li>• With support from the PGT, identify local contractors and conduct awareness and capacity building programmes to increase the inclusiveness of local contracting companies.</li> <li>• Complete land acquisition and compensation as per the REGDF prior to award of civil works contracts.</li> <li>• Contract management during implementation.</li> <li>• Ensure implementation of the mitigation and monitoring measures as set out in the EMPs and any required safeguards corrective actions.</li> <li>• Ensure implementation of the REGDF action plan.</li> <li>• Safeguards monitoring as per the land acquisition and resettlement plans (LARP) and REGDF subproject documents.</li> <li>• On project completion as confirmed by the construction supervision consultant (PG the Project Director (PAFO) conduct a site inspection in accordance with the Public Work and Irrigation Law. On confirmation of contract completion, PAFO will transfer the operation and maintenance (O&amp;M) of the asset to the water user group (WUG).</li> </ul> <p><b><u>For WUGs</u></b></p> <ul style="list-style-type: none"> <li>• Provide awareness and capacity building on project activities, WUG implementation roles and procurement modalities.</li> </ul>



Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Monitor and mentor water WUG contracting of in-command area works.</li> </ul>
PONRE Land Registration Department	<ul style="list-style-type: none"> <li>• Conduct land registration.</li> <li>• Issue land title and demarcation.</li> </ul>
PONRE Environmental Management Department	<ul style="list-style-type: none"> <li>• Conduct regular environmental monitoring of subprojects.</li> <li>• Undertake a general programme of monitoring environmental parameters (e.g. water quality) at strategic sample locations throughout the province.</li> <li>• A budget provision has been made for (i) training, (ii) travel and (iii) field allowances. Training is in the terms of reference (ToR) for the LIC consultants.</li> </ul>
MAF _ Plant Protection Centers	<ul style="list-style-type: none"> <li>• Identify the need for Pesticide Reduction Training, Crop Surveillance and integrated pest management as part of the LAOGAP quality assurance support</li> </ul>
MAF – Dept Agriculture and Land Management (DALAM)	<ul style="list-style-type: none"> <li>• Agricultural land use planning guidelines and verification.</li> </ul>
PAFO – DALAM	<ul style="list-style-type: none"> <li>• Agricultural land registration survey.</li> <li>• Consultation of land users in command areas.</li> <li>• Land registration proposal for agricultural land.</li> <li>• Participatory land use planning (PLUP) responsibilities</li> </ul>
MAF - Department of Forestry	<ul style="list-style-type: none"> <li>• Provide training and leadership in the issues surrounding ecological service protection for the land use change programs</li> <li>• Forest Land Use Guidelines and quality verification</li> </ul>
PAFO - Department of Forestry	<ul style="list-style-type: none"> <li>• Forest Land use zonation and survey demarcation.</li> <li>• Participate in PLUP when requested.</li> <li>• Supervision of forestry activities funded by ADB.</li> </ul>
Provincial Nutrition Committees	<ul style="list-style-type: none"> <li>• Facilitate multi-sectoral coordination for nutrition, including coordinating joint baseline and end line surveys to be developed by the National Nutrition Committee (NNC) Secretariat; ensuring alignment with any National Nutrition Advocacy and Communication Strategy and Plan of Action, or similar; supporting Joint Government of Lao PDR – Development Partners Monitoring Missions, etc.</li> <li>• Coordinate implementation and monitoring.</li> <li>• Undertake field monitoring activities.</li> <li>• Receive monitoring reports from districts and projects and provide annual and biannual reports to the NNC.</li> <li>• Provide leadership and support for District Nutrition Committees (DNC)</li> </ul>
DNC	<ul style="list-style-type: none"> <li>• Facilitate multi-sectoral coordination for nutrition, including identifying priority villages</li> <li>• Coordinate implementation and monitoring</li> <li>• Undertake field monitoring activities and provides annual and bi-annual reports to Provincial Nutrition Committee (PNC).</li> </ul>
District Agriculture and Forestry Office (DAFO)	<ul style="list-style-type: none"> <li>• Assign a focal point who should be at least a Deputy Head of the DAFO and should be the representative on the DNC. This officer will be responsible for planning and oversight of project Nutrition Support Advisor (NSA) activities in the district, including agreeing monthly and weekly workplans with the assigned technical staff</li> <li>• Assign one staff member to be responsible for the financial management related to project NSA activities</li> </ul>

Project organisation	Management Roles and Responsibilities
	<ul style="list-style-type: none"> <li>• Assign up to 3 full-time equivalent technical staff as members of District Nutrition Teams, with preference for female staff and staff belonging to local ethnic groups</li> <li>• Permit these assigned staff to participate in basic nutrition training and ensure that trained staff remain assigned for the duration of the project</li> <li>• Select priority villages in coordination with the DNC. The primary criterion will be nutrition needs as identified by the DNC, taking account of any other completed, ongoing or anticipated NSA interventions. The secondary criterion will be to give preference to nutrition priority villages in the watersheds and command areas of the PRI subprojects.</li> <li>• Collaborate with the Lao Womens Union (LWU) to form nutrition clubs in the selected villages, and provide them with NSA activities using a farmers' nutrition school approach, resulting in group and / or individual NSA development plans</li> <li>• Provide technical support to facilitate implementation of the development plans</li> </ul>

## B. Institutional arrangements for implementation of environmental safeguards

13. **PGT.** The PGT will appoint a qualified environmental safeguards officer to supervise and co-ordinate implementation of environmental safeguard requirements with support of the LIC International and National Environment Specialists. The PGT Project Director will be responsible for submitting semi-annual environmental safeguard reports to ADB for clearance and disclosure. They will also carry out regular monitoring during implementation and prepare a summary of progress of Environmental code of conduct and grievance redress mechanism (GRM) implementation for the quarterly project progress reports. They will participate in ADB loan review missions, ensure that semi-annual environmental safeguards monitoring reports are submitted to ADB on time and follow-up on agreed actions.

14. **PPIT.** Each PPIT will nominate an environmental safeguards focal point to support LIC Environment Specialists and PGT with co-ordination at the province level. The PPIT environmental safeguards focal point will undertake joint site visits with subproject Supervision Staff and Contractors to review implementation of ECC and GRM and report issues to PGT and LIC. PPIT will co-ordinate environmental quality monitoring with PONRE and invite PONRE to join site visits and ADB loan review missions.

15. **Loan Implementation Consultants.** The LIC will assist the executing agency (i.e. the PGT within DOI), the implementing agency (i.e. PAFO) and the other project stakeholders in the design and construction of the subproject. For this reason, the Program Governance Team will contract a LIC with two environmental specialists (9 months International Environment Specialist and 17 months National Environmental Specialist)- See PAM for detailed ToRs for LIC Environmental Specialists (LIC-ES) to support subproject designs and the preparation of IEE and for the supporting and monitoring of the ECC during subproject implementation.

16. The environmental safeguard consultants in the LIC will train and support PONRE and DONRE staff with monitoring visits and preparation of monthly and quarterly safeguard reports that will be submitted to the Vice Governor, and the EA via the PGT in DOI. The LIC will support the PGT to prepare a summary of safeguards and GRM implementation to be included in the

quarterly project progress reports to be submitted to ADB. The LIC will support PGT to prepare semi-annual integrated safeguard reports to be submitted to ADB. These reports will include details of issues raised and resolved through the GRM during the reporting period. The semi-annual integrated safeguards monitoring report will be disclosed on ADB website once approved.

17. During the design and preparation phase, the LIC environmental specialists will work with the WUG, PAFO and DAFO and the contractors for the subproject, to ensure the required environmental mitigation measures are incorporated into the final engineering designs documents. During the construction period, they must work with the subproject implementation partners to ensure that all of the environmental management and mitigation measures are fully complied with. The LIC Environment Specialists will provide safeguards and GRM capacity development training for PGT, PPIT, LIC, Contractors and GRM focal points on ECC mitigation and monitoring measures, templates for environmental monitoring and report.

18. **Contractors and Subcontractors.** All contract documents must include the ECC and an environment section in the terms of reference for bidders, and environmental contract clauses for contractors that include special conditions for the protection of the physical, biological and socio-economic environments. These will underpin the obligations towards the environment that must be upheld by all contractors. There is a need to ensure that contractors, as the stakeholders with the shortest-term involvement in the subproject, do not give rise to long term liabilities for the subproject owners and other stakeholders through reckless practices.

19. While the contractors themselves must fulfil their environmental responsibilities, in most cases success in this respect requires strict management and supervision of the contractor during site works: this is the responsibility of PAFO. Because of the competitive bidding process and the emphasis on engineering works, there is often a tendency for environmental safeguards to be delayed by contractors in the hope that costs can be saved and overlooked by management staff as being of lower importance than the primary functional infrastructure. This must not be allowed to happen, or it will mean that the subproject and therefore the overall SRIWSM is non-compliant with respect to both government and ADB safeguards.

20. The Contractor will be required to designate an environmental health and safety (EHS) Officer to supervise and train workers on occupational and community health and safety practices and to monitor and report on implementation of ECC and corrective actions. A GRM focal point/community liaison officer should also be designated to ensure public disclosure of planned construction to affected persons and monitoring and reporting on GRM. Each works Contractor EHS Officer will prepare a monthly report on ECC and GRM implementation for submission to PPIT, PGT and LIC.

21. The construction supervision consultants (CSC) will be responsible for day to day monitoring of implementation of health and safety and ECC requirements and issuing instructions for corrective actions, as needed.

22. ADB will visit project sites and review project performance against the ECC and legal agreements and as documented in periodic environment monitoring reports submitted by the PGT. If any of the safeguard requirements that are covenanted in the legal agreements are found not to be satisfactorily met, ADB will require the PGT to develop and implement an appropriate corrective action plan (CAP) agreed upon with ADB. If unanticipated environmental impacts become apparent during project implementation, ADB will require the PGT with support of LIC ES to (i) assess the significance of such unanticipated impacts; (ii) evaluate the options available to address them; and (iii) update the ECC.

### III. ENVIRONMENTAL MANAGEMENT AND MONITORING MATRIX

#### A. Introduction

23. The matrix on the following pages forms the practical management tool of the Code of Conduct. It lists the environmental impacts expected to be experienced on the Nam Phiang Subproject, and the typical mitigation measures that can be used to avoid, minimise or restore the effects of these impacts. The division of responsibilities between different agencies during the planning, construction and subsequent operation phases are given in simplified tables for the various sections of the PAFO (Appendix 1), the contractor (Appendix 2) and the Water User Group (Appendix 3).

24. The standards against which compliance is to be monitored are given in Appendix 4. These are based on the Lao PDR National Environmental Standards (2017), as well as on project- specific guidelines.

#### B. Subproject Construction Phase during Project implementation

25. Environmental mitigation in the construction phase is principally the responsibility of the contractor, managed by the Provincial Project Implementation Team as the provincial project implementing agency, supported by the DAFO and the Loan Implementation Consultant. The Contractor EHS Officer will monitor implementation of ECC and will submit monthly reports on implementation and any required corrective actions throughout construction to PPIT/PGT and LIC. The EHS officer will co-ordinate with the community regularly to ensure that any issues/grievances are resolved and reported in the monthly reports.

**Table 2: Construction Phase Environmental Management and Monitoring**

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.00	Environmental damage of any form results from the poor understanding of subproject requirements by the contractor and subcontractors.	1. EHS Officer/GRM focal point to ensure details of subproject GRM entry point contacts are disclosed at camp, sites and affected villages. 2. EHS Officer to induct/train workers on occupational and community health and safety practices 3. GRM focal points/community liaison officers to carry out regular consultation with affected persons. 1.	Contractor, PPIT Before mobilisation and as required eg. whenever the contractor mobilises a new subcontractor.	Programme Governance Unit in DOI. As per the timings given for implementation.

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.01	(a) Release of silt from excavations and earthworks during construction.	<ol style="list-style-type: none"> <li data-bbox="539 352 873 552">2. The removal of vegetation and creation of bare surfaces must be minimised to essential areas only.</li> <li data-bbox="539 552 873 741">3. Bio-engineering surface protection must be planted on all bare earthworks during the months of May to July.</li> </ol>	Contractor during the subproject construction period.	<p data-bbox="1193 352 1414 447">PPIT construction supervision.</p> <p data-bbox="1193 478 1414 720">PONRE. At all inspections throughout subproject construction period.</p>
1.02	Temporary closure of irrigation systems during construction.	<ol style="list-style-type: none"> <li data-bbox="539 762 873 1087">1. Contractors must provide a plan in advance to provide irrigation water into existing supply channels, which must be approved by the project implementing agency and the Water User Group.</li> <li data-bbox="539 1087 873 1318">2. If it is not possible to avoid temporary closure, then full and fair compensation is to be paid for loss of crops as a consequence.</li> </ol>	<p data-bbox="896 762 1170 919">Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li data-bbox="896 919 1170 1014">1. Before allowing the contractor to commence work.</li> <li data-bbox="896 1014 1170 1140">2. Throughout the subproject construction period.</li> </ol>	<p data-bbox="1193 762 1414 888">PPIT throughout subproject construction period.</p> <p data-bbox="1193 888 1414 1119">PONRE. At all inspections throughout subproject construction period.</p>
1.03	Disposal of soil from excavations and cleaning irrigation canals.	<ol style="list-style-type: none"> <li data-bbox="539 1335 873 1451">1. Soil from excavations should be re-used in designs wherever possible.</li> <li data-bbox="539 1451 873 1845">2. Where soil is excess to engineering requirements and is treated as spoil, it must be disposed of in the nearest available approved location, and stabilised and protected from rainfall using bio-engineering measures.</li> </ol>	<p data-bbox="896 1335 1170 1482">Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li data-bbox="896 1482 1170 1608">1. Throughout the subproject construction period.</li> <li data-bbox="896 1608 1170 1776">2. Before issuing the contractor's certificate of substantial completion.</li> <li data-bbox="896 1776 1170 1845">3. Before returning retention monies.</li> </ol>	<p data-bbox="1193 1335 1414 1451">PPIT throughout subproject construction period.</p> <p data-bbox="1193 1482 1414 1724">PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.04	Release of noxious gases into the atmosphere.	<ol style="list-style-type: none"> <li>1. Vehicles and machines must be in a good condition and serviced regularly, to ensure minimal emissions.</li> <li>2. All vehicles and machines must comply with the Lao PDR emissions standards.</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant. Throughout the subproject construction period.	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.05	Noise nuisance from construction activities.	<ol style="list-style-type: none"> <li>1. Contractors must not exceed statutory noise levels at any time.</li> <li>2. Work sites within 500 metres of habitation: (a) must not operate during the hours of darkness or on holidays; and (b) must have noise-abatement measures installed for other periods.</li> </ol>	Contractor, managed by the PPIT and Loan Implementation Consultant. Throughout the subproject construction period.	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
1.06	Temporary use of land for construction affects livelihoods or leaves it damaged.	<ol style="list-style-type: none"> <li>1. Land for use by any contractor or subcontractor must be agreed by both the PPIT and the local community authority before the contractor may have access.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before work is permitted to start.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.07	Influx of temporary labour disrupts local communities.	1. Contractors and subcontractors are required to use the maximum local labour possible.	Contractor, managed by the PPIT and Loan Implementation Consultant. 1. Throughout the subproject construction period.	PPIT throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.
1.08	Operation of construction machines affects both workers and local society.	1. The noise and dust reduction measures adhered to. 2. Safety measures for machine operation must be defined and approved by the project implementing agency. 3. Machine operators and workers must be trained and certificated in the safe use of machines.	Contractor, managed by the PPIT and Loan Implementation Consultant. 1. Before work is permitted to start. 2. Throughout the subproject construction period.	PPIT throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.

1.09	Pollution by hydrocarbons from construction plant.	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of hydrocarbons, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. Fuel and oil must be transported in properly designed vehicles meeting national standards.</li> <li>3. Fuel and oil must be stored at least 50 metres from a water body, in covered and bunded locations, and dispensed under strict controls.</li> <li>4. Vehicle and machine parking and service areas must have impermeable surfaces and the outlet drains must be fitted with oil traps.</li> <li>5. Contractors must have spill clean-up equipment on site, and persons always present who know when and how to use it.</li> <li>6. The contractor must have a land restoration plan that includes hydrocarbon facilities, which must have been implemented to the satisfaction of both the project implementing agency and the landowner before the contractor's final bill may be paid.</li> <li>7. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to mobilise to site.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>
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No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.10	Pollution by wastewater from camps and other work sites.	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of wastewater, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. "Black" wastewater from sanitation facilities must be led to a properly constructed septic tank and soakaway.</li> <li>3. "Grey" wastewater from washing and cooking facilities must be led to a septic tank or to a specially built reed bed filtration system.</li> <li>4. Oil-contaminated water from workshops and fuel stores must be collected and taken to an approved municipal waste management facility.</li> <li>5. The contractor must have a land restoration plan that includes wastewater facilities, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> <li>6. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to mobilise to site.</li> <li>2. Throughout the subproject construction period.</li> <li>3. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.11	Pollution from solid waste materials.	<ol style="list-style-type: none"> <li>1. Solid waste must be recycled wherever possible.</li> <li>2. Non-recyclable solid waste must be sent to an official landfill site.</li> <li>3. Open burning of solid waste is prohibited</li> <li>4. The contractor must have a land restoration plan that includes solid waste, which must have been completed to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Throughout the subproject construction period.</li> <li>2. Before returning retention monies.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period. PONRE. At all inspections throughout subproject construction period.</p>
1.12	Injuries to workers and others.	<ol style="list-style-type: none"> <li>1. Work sites must be clearly demarcated using barrier tape and all non-project personnel excluded.</li> <li>2. All staff, workers and visitors to construction sites must be issued with appropriate personal protective equipment.</li> <li>3. All staff, workers and visitors to construction sites must be briefed on safe working procedures for that site.</li> <li>4. Every construction site must have a first aid kit and at least two persons always present who are trained and competent to use it.</li> </ol>	<p>Contractor, managed by the PPIT and Loan Implementation Consultant.</p> <ol style="list-style-type: none"> <li>1. Before the contractor is permitted to commence work.</li> <li>2. Throughout the subproject construction period.</li> </ol>	<p>PPIT environmental section. Regularly throughout subproject construction period.</p> <p>PONRE. At all inspections throughout subproject construction period.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
1.13	Covid-19 prevention for joining team	<p>7. All site engineers / labours must have enough vaccinated as recommended by the nation</p> <p>8. Self-quarantine / isolation for at least 14 days before working</p> <p>9. Take covid-19 at least 2 times (the person come from risky areas) in prior to start working and staying at the site/camp</p> <p>10. Develop or convene a joint occupational safety and health committee with members representing the employer and workers.</p> <p>11. Train team members on the basic principles for the formulation and implementation of occupational safety and health preventive and control measures</p> <p>12. Develop and communicate a work plan on safe working for COVID-19. Such plan should be fully aligned with any government regulations and guidelines on COVID-19 prevention and control, or in the absence thereof, with international good practice guidelines as may be updated from time to time.</p>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.14	Risk assessment during the Covid-19 pandemic to	3. Undertake a risk assessment to determine the	Contractor, managed by the PPIT and Loan	PPIT environmental section.

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
	decide when to work, who works and how	preventive and control measures 4. Ensure preventative measures are in place before resuming or beginning construction work	Implementation Consultant	Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.15	Covid-19 prevention (Regularly clean and disinfect)	4. Increase the frequency of cleaning and disinfection, in particular heavily trafficked areas and common areas, including work camps. 5. All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal areas are wiped down at least twice a day with a disinfectant. 6. Discourage the sharing of items such as cups, glasses, plates, tools	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.16	Promote personal Hygiene- Covid-19 prevention	6. Provide workers with the conditions and means necessary for frequent 7. hand washing (soap, water or alcohol gel) with a posted hand washing protocol at site entries, exits, bathrooms, communal areas, offices, and any other areas with commonly touched surfaces.	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		<p>8. Inform workers of the need to avoid physical contact when greeting, and avoid touching eyes, nose and mouth</p> <p>9. Inform workers of the need to cover the mouth and nose with a disposable handkerchief when coughing or sneezing or the crook of their arm.</p> <p>10. Dispose of tissues in a lined and covered waste bin and wash hands afterwards</p>		period till the end of Covid-19 pandemic.
1.17	Health surveillance and insurance-Covid-19 prevention	<p>7. Before entering the site, staff and visitors must confirm that they are not currently exhibiting flu-like symptoms.</p> <p>8. Monitor the health status of workers, develop protocols for cases of suspected and confirmed COVID-19. The protocol will state that:</p> <ul style="list-style-type: none"> <li>workers with symptoms or confirmed cases must be isolated within the construction camp or stay at home for 7 days after symptoms started.</li> <li>If symptoms persist after 7 days the person must isolate until the symptoms stop</li> <li>People who have been in close contact with the person with confirmed COVID-</li> </ul>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		<p>19 be quarantined for 14 days</p> <p>9. All workers in quarantine or isolation must be provided with adequate food, water, medical assistance and sanitation.</p> <p>10. Identify workers who have had close contact with people infected with COVID-19 and follow national medical guidance.</p> <p>11. Communicate confirmed cases of COVID-19 infection to the appropriate authorities.</p> <p>12. All workers should be provided with health insurance that includes COVID-19 treatment</p>		
1.18	Review emergency preparedness plans- Covid-19 prevention	2. Develop an emergency plan adapted to COVID-19 and regularly review it.	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.19	Camp location- Covid-19 prevention	<p>4. Not in area liable to flooding, landslide or other natural disaster</p> <p>5. Not in area affected by construction dust, noise, sewage or other pollution</p> <p>6. Not in a residential area</p>	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
				<p>end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>
1.20	Minimum housing standards-Covid-19 prevention	<p>14. a separate bed for each worker</p> <p>15. beds should not be arranged in tiers of more than two;</p> <p>16. separate accommodation of the sexes or to accommodate couples</p> <p>17. adequate natural light during the daytime and adequate artificial light</p> <p>18. adequate ventilation to ensure sufficient movement of air</p> <p>19. adequate supply of safe potable water</p> <p>20. adequate sanitary facilities (see below);</p> <p>21. adequate drainage</p> <p>22. adequate furniture for each worker to secure his or her belongings, such as a locker.</p> <p>23. common dining rooms, canteens or mess rooms, located away from the sleeping areas</p> <p>24. appropriately situated and furnished laundry facilities</p> <p>25. reasonable access to plug sockets for</p>	Contractor, managed by the PPIT and Loan Implementation Consultant	<p>PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic</p> <p>PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.</p>

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
		charging telephones and other devices 26. rest and recreation rooms and health facilities, where not available in the community		
1.21	Minimum accommodation sizes - Covid-19 prevention	Sleeping space 4. inside dimensions over 198 centimeters by 80 centimeters; Sleeping room: 5. headroom of over 203 centimeters allowing full free movement 6. Beds minimum 2m apart for COVID-19 risk management	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.22	Sanitation facilities - Covid-19 prevention	9. One toilet, one tap / basin, one toilet for every 6 people 10. Convenient location to accommodation 11. Provision of soap 12. Separate facilities for men and women 13. Ventilation to open air 14. Fresh cold running water 15. Clean and hygienic 16. Septic tank / sewage treatment facility, or pit latrines located at least 200m from surface waters, and in areas of suitable soil profiles and above the groundwater levels	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.23	Health and Safety within worker	8. Separate area for sick workers to prevent	Contractor, managed by the PPIT and	PPIT environmental section.



No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
	accommodation - Covid-19 prevention	transmission of disease 9. Smoke detector in sleeping area 10. Fire safety throughout accommodation such as fire extinguishers, fire alarms, fire blankets 11. Worker training in fire prevention and procedures 12. Fire exit sign, adequate means of escape and clearly maintained exit 13. Security lighting within camp and for sanitation block and lighting for route from sleeping area to sanitation block. 14. Electrical cables to be in safe condition, elevated and not in areas liable to flood	Loan Implementation Consultant	Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.
1.24	Inspection - Covid-19 prevention	3. 2 weekly inspection to inspect for cleanliness, state of repair of building, accommodation and fire equipment. 4. Record inspection results and retain for review	Contractor, managed by the PPIT and Loan Implementation Consultant	PPIT environmental section. Regularly throughout subproject construction period till the end of Covid-19 pandemic  PONRE. At all inspections throughout subproject construction period till the end of Covid-19 pandemic.

### C. Subproject Operation Period following Project implementation

26. Environmental mitigation in the operation period is principally the responsibility of the Water User Group and the Provincial Irrigation Section in the PAFO, supported by other sections of the PAFO and the DAFO.

**Table 3: Operation Period Environmental Management and Monitoring**

No.	Potential Impact	Safeguards or Mitigation	Responsibility to Implement and Timing	Monitoring, Checking and Timing
2.01	Erosion of canal banks, either from flood surges or normal flows.	<ol style="list-style-type: none"> <li>1. All flood protection works must be maintained as per the design of the subproject, or any subsequent engineering works.</li> <li>2. Any flood damage must be reviewed and appropriate measures designed for resolution.</li> <li>3. Occasional minor flood damage should normally be resolved by using appropriate measures.</li> <li>4. The use of civil engineering structures (i.e. concrete or gabion works) may be required in the event of serious damage from exceptional floods.</li> </ol>	<p>Water User Group, calling on the PIS – PAFO for advice if damage is severe. If necessary, specialist expertise should be requested from the central Department of Irrigation.</p> <p>Annually.</p>	<p>PAFO and PONRE.</p> <p>Annually.</p>

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### Appendix 1. Responsibilities of the Provincial Agriculture and Forest Office

Provincial Project Implementation Team of the PAFO – Construction Period		
No.	What you Must Do	Why You Must Do It
1.02	<ol style="list-style-type: none"> <li>1. At a pre-mobilisation site meeting, the contractor must demonstrate a full understanding of the requirements of the Code of Conduct.</li> <li>2. All of the sub-plans listed below must be created, reviewed, improved if necessary and accepted for approval.</li> <li>3. The contractor must demonstrate that he is fully responsible for all subcontractors' adherence to the provisions of the Code of Conduct, and that he has formally ensured this.</li> </ol>	To ensure that environmental damage of any form does not result from the poor understanding of subproject requirements by the contractor and subcontractors.
1.17	<ol style="list-style-type: none"> <li>1. Instructions on managing the infrastructure must be provided to the end users before handover.</li> <li>2. The operating instructions must be explained to the Water User Group.</li> <li>3. Before handover, the operating instructions must be finalised and the Code of Conduct requirements included.</li> </ol>	To ensure that subsequent users fully understand how to manage the subproject works.

Provincial Irrigation Section of the PAFO – Operation Period		
No.	What you Must Do	Why You Must Do It
2.01	<ol style="list-style-type: none"> <li>1. Once scheme operation commences, the gauged river flows and water offtake volumes must be reassessed. These, plus any complaints from downstream users, must be used to recalculate the allowable offtake.</li> <li>2. The scheme must then be revised accordingly.</li> </ol>	To ensure that there is no disruption of downstream hydrological flows due to offtake from river.
2.03	<ol style="list-style-type: none"> <li>1. If these impacts occur, then it shows that the assumptions of water flow made during subproject design were wrong. This is likely to be due to a lack of flow data at design stage.</li> <li>2. The minimum flow release must be recalculated, based on user needs and the latest data on river flow.</li> <li>3. Water use by the subproject scheme must be reviewed against what is actually available.</li> <li>4. A revised scheme management plan must be introduced, implemented, monitored and adjusted until it resolves the problem.</li> </ol>	So that the extraction of water from a river does not cause a decline or loss of aquatic biodiversity, or leave downstream users short, if the subproject irrigation scheme requires more water than is available.

<b>PAFO and DAFO Watershed Management, Agriculture and Forestry Teams – Operation Period</b>		
<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
2.02	<ol style="list-style-type: none"> <li>1. The catchment land use plan, preparations for which should have been initiated before project implementation should be continued indefinitely to ensure that the scheme is safeguarded throughout its operational life. The plan's primary objective is upstream catchment protection to ensure that the subproject irrigation scheme is safeguarded in terms of water supply and limited sediment supply.</li> <li>2. Arrangements for implementation of the plan must be maintained.</li> </ol>	So that upstream land uses do not cause a decline in the quality and quantity of water available for the irrigation scheme.

## Appendix 2. Responsibilities of the Contractor

The subproject civil works contractor is responsible for the following actions during the construction phase.

<b>Contractor – Construction Phase</b>		
<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.00	<ol style="list-style-type: none"> <li>1. Appoint qualified Environmental, Health and Safety Officer to manage site safety and implementation of ECC and GRM requirements.</li> <li>2. EHS Officer to provide induction, training and toolbox talks for all Contractor staff and other site visitors.</li> <li>3. EHS Officer to liaise with affected persons and local community</li> <li>4. EHS Officer to implement and monitor any required corrective actions and resolution of issues raised through the GRM.</li> <li>5. EHS Officer to report monthly to PPIT on implementation of ECC and GRM.</li> </ol>	To ensure Contractor fulfils their contractual requirements to: provide and maintain a safe and hygienic working environment; implement, monitor and report on subproject ECC and GRM requirements effectively.
1.01	<ol style="list-style-type: none"> <li>6. The removal of vegetation and creation of bare surfaces must be minimised to essential areas only.</li> <li>7. Vegetation clearance and earthworks may only be undertaken during the months of October to April.</li> <li>8. Temporary sediment settling ponds built using strong stone or timber check dams (not bamboo or fabric silt fences) must be constructed to trap sediment from all earthworks that have unprotected surfaces at any time during the months of April to October inclusive.</li> <li>9. Borrow areas, camp sites, temporary access tracks etc. must be fully rehabilitated back to a condition that is fully protected against soil erosion.</li> <li>10. Bio-engineering surface protection must be planted on all bare earthworks during the months of May to July.</li> </ol>	To avoid water course pollution from releases of silt from excavations and earthworks during construction, and from poorly finished earthworks following construction.
1.03	<ol style="list-style-type: none"> <li>1. No tree over 200 mm diameter at breast height (1.5 metres above the ground) may be cleared unless the design drawings specifically require it.</li> <li>2. The contractor's site clearance plan must be limited to the agreed work site boundaries and must be approved by the PPIT's environmental representative before any clearance may be commenced.</li> </ol>	So that the clearance of vegetation does not lead to the unnecessary removal of trees and other plants.
1.04	<ol style="list-style-type: none"> <li>1. Contractors must provide a plan in advance to provide irrigation water into existing supply channels, which must be approved by the project implementing agency and the Water User Group.</li> <li>2. If it is not possible to avoid temporary closure, then full and fair compensation is to be paid for loss of crops as a consequence.</li> </ol>	To avoid temporary closures of irrigation systems during construction.

<b>Contractor – Construction Phase</b>		
<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.05	<ol style="list-style-type: none"> <li>1. Soil from excavations should be re-used in designs wherever possible.</li> <li>2. Where soil is excess to engineering requirements and is treated as spoil, it must be disposed of in the nearest available approved location, and stabilised and protected from rainfall using bio-engineering measures.</li> </ol>	To ensure the safe disposal of soil from excavations such as irrigation canals.
1.06	<ol style="list-style-type: none"> <li>1. Earthworks must be halted during periods of strong winds.</li> <li>2. Heavily used access tracks must be sprayed with water during dry periods.</li> <li>3. On all unmetalled surfaces, construction traffic must be limited to 30 kmh within 250 metres of habitation and 80 kmh elsewhere.</li> <li>4. Loads of dust-making materials must be covered.</li> <li>5. Crushers must be fitted with water sprays to prevent dust emissions.</li> </ol>	To minimise the release of dust into the atmosphere from excavations and other construction activities.
1.07	<ol style="list-style-type: none"> <li>1. Vehicles and machines must be in a good condition and serviced regularly, to ensure minimal emissions.</li> <li>2. All vehicles and machines must comply with the Lao PDR emissions standards.</li> </ol>	To minimise the release of noxious gases into the atmosphere.
1.08	<ol style="list-style-type: none"> <li>1. Contractors must not exceed statutory noise levels at any time.</li> <li>2. Work sites within 500 metres of habitation: (a) must not operate during the hours of darkness or on holidays; and (b) must have noise-abatement measures installed for other periods.</li> </ol>	To minimise noise nuisance from construction activities.
1.09	<ol style="list-style-type: none"> <li>1. Land for use by any contractor or subcontractor must be agreed by both the PPIT and the local community authority before the contractor may have access.</li> <li>2. Full and fair compensation is to be paid for loss of crops or other assets before the contractor may have access to the land.</li> <li>3. The contractor must have a land restoration plan, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor's final bill may be paid.</li> </ol>	To ensure that the temporary use of land for construction does not affect livelihoods or leave it damaged.
1.10	<ol style="list-style-type: none"> <li>1. Contractors and subcontractors are required to use the maximum local labour possible.</li> <li>2. If a significant number of staff and workers (i.e. more than 20) are to be brought into the subproject site, then the contractor must provide a management plan and code of conduct for the staff and workers, that is approved by the local community authority.</li> </ol>	To minimise the disruption to local communities due to an influx of temporary labour.

<b>Contractor – Construction Phase</b>		
<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.11	<ol style="list-style-type: none"> <li>1. The noise and dust reduction measures listed above must be adhered to.</li> <li>2. Safety measures for machine operation must be defined and approved by the project implementing agency.</li> <li>3. Machine operators and workers must be trained and certificated in the safe use of machines.</li> </ol>	To minimise the effects on both workers and local society from the operation of construction machines.
1.12	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of hydrocarbons, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. Fuel and oil must be transported in properly designed vehicles meeting national standards.</li> <li>3. Fuel and oil must be stored at least 50 metres from a water body, in covered and bunded locations, and dispensed under strict controls.</li> <li>4. Vehicle and machine parking and service areas must have impermeable surfaces and the outlet drains must be fitted with oil traps.</li> <li>5. Contractors must have spill clean-up equipment on site, and persons always present who know when and how to use it.</li> <li>6. The contractor must have a land restoration plan that includes hydrocarbon facilities, which must have been implemented to the satisfaction of both the project implementing agency and the landowner before the contractor's final bill may be paid.</li> <li>7. Any subcontractor must comply with the same rules, at the contractor's liability.</li> </ol>	To avoid the pollution by hydrocarbons from construction plant.



<b>Contractor – Construction Phase</b>		
<b>No.</b>	<b>What you Must Do</b>	<b>Why You Must Do It</b>
1.13	<ol style="list-style-type: none"> <li>1. The contractor must prepare a plan for the management of wastewater, which must be approved by the PPIT before the contractor is permitted to mobilise to site.</li> <li>2. “Black” wastewater from sanitation facilities must be led to a properly constructed septic tank and soakaway.</li> <li>3. “Grey” wastewater from washing and cooking facilities must be led to a septic tank or to a specially built reed bed filtration system.</li> <li>4. Oil-contaminated water from workshops and fuel stores must be collected and taken to an approved municipal waste management facility.</li> <li>5. The contractor must have a land restoration plan that includes wastewater facilities, which must have been implemented to the satisfaction of both the PPIT and the landowner before the contractor’s final bill may be paid.</li> <li>6. Any subcontractor must comply with the same rules, at the contractor’s liability.</li> </ol>	To avoid the pollution from construction site wastewater, from camps and other work sites.
1.14	<ol style="list-style-type: none"> <li>1. Solid waste must be recycled wherever possible.</li> <li>2. Non-recyclable solid waste must be sent to an official landfill site.</li> <li>3. Open burning of solid waste is prohibited</li> <li>4. The contractor must have a land restoration plan that includes solid waste, which must have been completed to the satisfaction of both the PPIT and the landowner before the contractor’s final bill may be paid.</li> </ol>	To avoid pollution from solid waste materials.
1.15	<ol style="list-style-type: none"> <li>1. Work sites must be clearly demarcated using barrier tape and all non-project personnel excluded.</li> <li>2. All staff, workers and visitors to construction sites must be issued with appropriate personal protective equipment.</li> <li>3. All staff, workers and visitors to construction sites must be briefed on safe working procedures for that site.</li> <li>4. Every construction site must have a first aid kit and at least two persons always present who are trained and competent to use it.</li> </ol>	To avoid injuries to workers and others.
1.16	<ol style="list-style-type: none"> <li>1. All small cultural sites (such as small shrines and graves) must be protected by the contractor during works periods.</li> <li>2. A plan for the protection of cultural sites must be approved by the PPIT.</li> <li>3. Once construction is complete the surrounding of such sites must be restored to their pre-construction condition.</li> </ol>	To minimise the disruption of cultural sites.

Contractor – Construction Phase		
No.	What you Must Do	Why You Must Do It
1.17	<ol style="list-style-type: none"><li>1. Instructions on managing the infrastructure must be provided to the end users before handover.</li><li>2. The operating instructions must be explained to the Water User Group.</li><li>3. Before handover, the operating instructions must be finalised and the Code of Conduct requirements included.</li></ol>	So that subsequent users fully understand how to manage the subproject infrastructure.

### Appendix 3. Responsibilities of the Water User Group – Operation Period

Water User Group – Operation Period		
No.	What you Must Do	Why You Must Do It
2.04	<ol style="list-style-type: none"> <li>1. All flood protection works must be maintained as per the design of the subproject, or any subsequent engineering works.</li> <li>2. Any flood damage must be reviewed and appropriate measures designed for resolution.</li> <li>3. Occasional minor flood damage should normally be resolved by using appropriate bio-engineering measures.</li> <li>4. The use of civil engineering structures (i.e. concrete or gabion works) may be required in the event of serious damage from exceptional floods.</li> </ol>	To prevent flood damage and the erosion of canal banks, either from flood surges or normal flows.

#### **Appendix 4. SRIWSM Project Environmental Guidelines**

The Government of Lao PDR National Environmental Standards (2017) will be used as the reference points for the areas that they cover. The list below gives the additional guideline standards that must be followed on all SRIWSM subprojects. If new standards are gazetted by the government during the project implementation period, then they shall take precedence if they are stricter.

##### **Soil**

- All bare surfaces (including roadsides and drains but excluding road running surfaces) shall be protected using bio-engineering measures that shall be implemented during the months of May to July each year. The SRIWSM bio-engineering guidelines will be followed.
- Agrichemicals shall only be used that are not on the Government of Lao PDR lists of prohibited substances under the Regulation on the Control of Pesticides in Lao PDR (Regulation No 2860/MAF, 11 June 2010) and the Decree on Pesticide Management: (Decree No. 258/GOV, 24 August 2017).

##### **Vegetation**

- No tree of more than 200 mm diameter at breast height (1.5 metres above the ground) shall be cleared unless the design drawings specifically require it.
- Other vegetation shall be cleared only within agreed site boundaries or in connection with agreed subproject activities.
- Fire shall not be used as a means of clearing vegetation or for the disposal of cleared vegetation.

##### **Water**

- The National Environmental Standard (2017) for water quality shall apply in every case.
- A vegetated band of at least 50 metres should be maintained between any areas of disturbance and any water course. Exceptions are made only where irrigation headworks and road crossings must necessarily be closer.

##### **Animals**

- All subproject staff, workers and beneficiaries shall be issued with a list of rare, threatened and endangered species in the area around the subproject, which shall not be hunted, traded or eaten. Such a list shall be based on the regional data held by the International Union for the Conservation of Nature (IUCN) Red List.

##### **Air**

- The National Environmental Standard (2017) for ambient air quality shall apply in every case.
- On all unmetalled surfaces, construction traffic shall be limited to 30 kmh within 250 metres of habitation and 80 kmh elsewhere.
- Dust emissions shall be minimised by spraying water during dry weather and using other site-specific measures.
- Vehicle and machine engines shall be stopped when stationary.

##### **Storage**

- No storage of oil, fuel or chemicals is permitted within 50 metres of a water body.
- All stores shall be covered with full rain protection.
- Oil and fuel stores shall have impermeable bunds capable of retaining 150 percent of the

stored volume indefinitely.

**Hazardous Materials**

- Fuels, oils, cement, fertilisers and pesticides shall be included in the category of hazardous materials.
- All hazardous materials shall be stored in secure compounds, with rain protection and bunding in case of spills and leakages.
- Every site where hazardous materials are stored or used shall have spill clean-up equipment and staff trained in its use.
- Fuel handling areas shall be bunded and all drainage water directed through oil traps. Sediment from oil traps shall be sent for disposal at a waste disposal facility authorised for the handling of hydrocarbon waste.

**Solid Waste Management**

- All work sites shall be provided with sanitary facilities. These may be pit latrines or water-based toilets with septic tanks and subsurface soakaways.
- Solid waste shall be recycled where facilities exist.
- Where solid waste cannot be recycled, it shall be sent to an approved landfill site.
- Fire shall not be used as a means of disposing of waste.

**Society**

- The National Environmental Standard (2017) for noise and vibrations shall apply in every case.
- There shall be no night-time working (i.e. between sunset and sunrise) within 500 metres of habitation.

**Construction Site Safety**

- All construction sites shall be delineated with barrier tape and non-project personnel excluded at all times.
- All staff and workers shall wear appropriate personal protective equipment (PPE) at all times that they are on a work site.
- The minimum for all personnel is: reflective vest; safety helmet; and safety boots.
- Other PPE such as gloves, eye protection, ear protection, etc. shall be used according to the work performed or underway nearby in the site.