Thanaleng Dry Port & Logistics Park Vientiane Project

Environmental and Social Management and Monitoring Plan (ESMMP)

Submit To:
Department of Natural Resources and Environment Policy (DNREP)
Ministry of Natural Resources and Environment (MONRE)

Project Developer:

Sitthi Logistics Lao Company Ltd.

Address: Khamphentmeuang Road, Phonthan Village, Xaysettha District, Vientiane Capital

Tel: 021 262 204; Fax: 021 262 205, email: info@sitthilogistics.com

website: www.sitthilogistic .com

Consultant Company:

Lao Consulting Group Company Ltd.
Address: Lao-Thai Friendship Road,
Ban Watnak, Sysattanak District,
Vientiane Capital
Tel: 021 313259, Fax 021-314627
Email: lcg@laoconsulting.com
website: www.laoconsulting.com

ບໍລິສັດ ອິນໂນກຣີນ ເອັນຈິເນຍລິ່ງ ຈຳກັດ
Address: Phonsynoun Road,
Ban Dongpalanthong, Sysattanak District,
Vientiane Capital
Tel/Fax: 021 264575
email: info@innogreenlao.com
website: www.innogreenlao.com

January, 2020

Abbreviations and Definitions

Abbreviation

ESIA	Environmental and Social Impact Assessment
IEE	Initial Environmental Examination
ESMMP	Environmental and Social Management and Monitoring Plan
MoNRE	Ministry of Natural Resources and Environment
DoNREP	Department of Natural Resources and Environment Policy
DoNREM	Department of Natural Resources and Environment Monitoring
PONRE	Capital/Provincial Department of Natural Resources and Environment
DONRE	District Office of Natural Resources and Environment
NA	National Assembly
GoL	Government of Laos
Lao PDR	Lao Peoples' Democratic Republic
HH	Household
km	Kilometer
m	meter
mm	Millimeter
cm	Centimeter
ha	Hectare
km^2	Square Kilometer
m^3	Cubic meter
m^3/min	Cubic meter/min
m/s	meter/s
kg	Kilogram
dB(A)	Decibel
USD	US Dollar
GDP	Gross Domestic Product
CY	Container yards
NEDA	Neighboring Countries Economic Development Cooperation Agency
VLP	Vientiane Logistics Park Project JICA Study, 2015
EMU	Environmental management Unit

Definitions

Environment	means any organic and inorganic features existing naturally or created by mankind and surrounding features such as people, animals, plants and others and the positive and negative interaction and impacts on livelihood, production, existence and expansion of mankind and nature. Environment consists of social and natural environment;
Social Environment	means any organic and inorganic features created by mankind and the positive and negative interaction and impacts on livelihood, production, existence and expansion of mankind and nature;
Natural Environment	means any organic and inorganic feature existing naturally and the positive and negative interaction and impacts on livelihood, production, existence and expansion of mankind and nature;
Environmental Impact	means positive and negative, direct and indirect, short-term and long-term impacts of investment projects and activities on the ecosystem, natural resources, climate change, natural heritages, cultural heritages, life, health, assets, livelihood, residence, and others.;
Environmental Compliance Certificate (ECC)	is a document certifying environmental acceptance for investment projects and activities
Environmental and Social Management and Monitoring Plan	means a plan that consolidates various key tasks of social and natural environment, identifying methods and preventive measures, mitigation, solving of environmental impacts, which are already reported by Social and Natural Environmental Impact Assessment, and identification of organizational structures, responsibilities, time schedules and sufficient budgets for implementing the management and inspection of the social and natural environment;
Public Involvement	is a process of consultation, information provision, and public comments on investment projects and activities during development phase and review of the IEE report, the ESIA report, and the EMMP including the implementation of monitoring of environmental management in each phase of the investment projects and activities to ensure the transparency, fairness, and effectiveness.;
Project Owner	means any individuals, legal entities, or national or foreign organizations receiving a permission to conduct study, surveys, designs, construction, and operations of investment projects and activities in Lao PDR;
Dry Port	means any individuals, legal entities, or national or foreign organizations receiving a permission to conduct study, surveys, designs, construction, and operations of investment projects and activities in Lao PDR (UNESCAP Intergovernmental Agreement on Dry port).

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Chapter 1 Project Overview

1.1 Project Background

Lao PDR is located in the mainland of the Greater Mekong Sub-region "GMS". By this strategic location, Laos has established a policy to transform from a landlocked to the land-linked country or providing the communication-transport service in terms of the regional and international transport, trade and economic connectivity. It is the best opportunity to develop a country to become a logistics center in the Greater Mekong Sub-region and ASEAN region in order to contribute to the economic-social development and step by step graduate from the least developed country status.

However, Lao PDR is still confronted with various obstacles and challenges in the transport services particularly its inefficient system. The current transport service in Laos is still below international standards in terms of efficiency, reliability and cost due to the fact that the required infrastructure is insufficiently developed and the domestic transport industry is still backward.

To achieve the goal, the government has facilitated the dry port development to be the international trade gateway which is the fundamental structure for the integration of road and railway transport to a seaport and to become the integration and distribution center for domestic destinations including the inventory and transshipment facilities as well as the customs clearance services. These services are to minimize the logistic cost, increase the state revenue, provide a comprehensive logistics service, implement the transport and communication policy and also be in readiness for the national transport and logistics.

In parallel with this plan, the National Strategic on Freight Transport Logistic Development Plan in Lao PDR and the study by JICA indicated that the Proposed Investment and Development of Thanaleng Dry Port and Vientiane Logistics Park Project is suitable in terms of its topography and international trade volume which has been increasing significantly. These are the main factors for consideration for the dry port construction which will be significant chain for freight transport promotion crossing Lao PDR with the shortest route from east to west compared with other cross-borders. However, this will be the main transport linkage route from China to Thailand and Vung-Ang port in Vietnam crossing Lao PDR.

Therefore, the Government and Sitthi Logistic (Lao) Limited Company have collaborated on the Investment and Development of Thanaleng Dry Port and Vientiane Logistics Park Project. This will be a modernized project with international standards and also be the linkage center for domestic and international transport in Vientiane Capital as well as Lao PDR. The Memorandum of Understanding to conduct a feasibility study on Thanaleng Dry Port and Vientiane Logistics Park Project was signed on 5 Apr 2019 in comply with the national legislation. Therefore, Innogreen Engineering Co., Ltd in association with Lao Consulting Group Co., Ltd, environmental and social consultant companies have been engaged by the project developer, Sitthi Logisticts Lao Co., Ltd to conduct the survey-study and to prepare the Environmental and Social Impact Assessment (ESIA), Environmental and Social Management and Monitoring Plan (EMMP) for this Project. The study and survey procedures have followed the relevant regulation and guidelines such as the Scoping Study Report and the submitted TOR , the public consultation meetings and public involvement also have been conducted step by step.

1.2 The objective of the Environmental and Social Management and Monitoring Plan (ESMMP)

The objective of the ESMMP is to guide Environmental and Social Management and Monitoring Planning for the Project. The main objectives are to:

(1) Provide the technical, mitigation and prevention measures implementation plan to avoid or minimize direct and indirect impacts during the construction and operation phases
(2) To monitor the implementation of direct and indirect impact mitigation and prevention measures throughout the project implementation.

The Environmental and Social Management and Monitoring Plan is also used for evaluation the overall project's obligations on the implementation of the direct and indirect impact prevention and mitigation measures including a reliable, evidence-based and scientific methodology monitoring, following the National Environmental Standard that is relevant to the environmental monitoring. The ESMMP also defines the detail of the relevant organization on the effective implementation of the mitigation plan, environmental monitoring budget, necessary tools for human resources development and expertise has been included in the Monitoring Plan, training and other capacity-building activities are also included.

1.3 Structure of Environmental and Social Management and Monitoring Plan

This Plan includes the details of the environmental and social managment and monitoring plan, safeguards measures and monitoring plan which is appropriate for each negative impact by the project. The monitoring plan is covers the pre-construction, construction and operation phases, as detailed below:

Chapter 1	Brief Description of Project Background, Project Development and Environmenal Study, the Objectives of ESMMP.
Chapter 2	Presentation of the Regulations, Laws, Decisions, Standards and other relevant legislations on Environmental and Social such as Environmental Protection Law Addendum, 2012, Decree on Environmental Impact Assessment No. 21/PMO, 2019, National Enviornmental Standard No. 81/PMO, 2017, etc.
Chapter 3	Summary of the Potential Impact by the Project Implementation
Chapter 4	Environmental and Social Management Plan, Monitoring and Evaluation Plan and Budget for Environment and Social Management.
Chapter 5	Conclusions and Recommendations for the ESMMP implementation

Chapter 2: Relevant Laws, Legislations and Regulations

Thanaleng Dry Port and Vientiane Logistics Park Project has prepared the Environmental and Social Impact Assessment Report (ESIA), Environmental and Social Management and Monitoring Plan (ESMMP) in accordance with the policy, regulations and related laws including: legislations, decrees, agreements, instructions and conventions related to the Environmental and Social Management. In addition, the project activities shall comply with the requirements in the legislations. However, the relevant state sectors are responsible for establishing the policy and laws related to Environmental and Social Impact Assessment. This legal framework aims to minimize the potential impacts on community and environment from project implementation. This is to ensure that the project implementation has complied with the sustainable development and economic-social development policy issued by the party and government.

The following laws, decrees and regulations (the details of which were stated in the ESIA) these legislations are currently effective and will be used for this project and all activities shall follow and be in compliance with these legislations:

No	Relevant Law and Policy
Law and legislation	
1	Law on Environnemental Protection Addendum, 2012
2	Law on Land Transportation (No. 24/NA, 2012)
3	Law on Land (No.04/NA,2003)
4	Law on Land Traffic (NO. 23/NA, 2012)
5	Law on Multiple Transportation (No. 28/NA, 2012)
6	Law on Railway (No. 62/NA, 2018)
7	Law on Customs (2011)
8	Law on Construction (No.05/NA, 2009)
9	Law on Public Roads (No.03/NA, 2016)
10	Law on Urban Planning (No. 072/NA, 2017)
11	Law on Investment Promotion (No. 02/NA, 2009)
12	Law on Labour (No. 021/NA, 2013)
13	Law on Water and Water Resource (No.23/NA, 2017)
14	Law on Hygiene, Disease Prevention and Health Promotion (No 08/NA, 2011)
15	Other relevant legislation
Relevant Decree, Policy and Regulations	
1	Agreement on Certified and Notice to use the list of the investment project and activities has to conduction Initial Environmental Examination or Environmental Impact Assessment (No.8056/MoNRE dated 17 December 2013.
2	Decree on Environmental Impact Assessment (No. 21/PMO 2019)
3	Agreement on Certified and Notice to use the technical guideline on writing the Environment Impact Assessment Report (No. 2796.1/MoNRE. DESIA.DMM, dated 19 December 2016)

4	Agreement on Certification and Notice to use the guideline on public involvement in the Environmental Impact Assessment Process for Development Project (No.707/MoNRE, 2013)
5	Decree on Compensation and Resettlement (No.84/PMO, 2016)
6	Decision on the National Environmental Standard (No.81/PMO, 2017)
International treaties and conventions that related to the impacted by the project	
1	United Nations Convention on Climate Change 1992
2	ASEAN 1985 Agreement on the Protection of Nature and Natural Resource
3	Convention on International Vegetable Protection 1955
4	Kyoto Protocol on Reducing of Greenhouse Gas Emission 2003
5	Kyoto Protocol of United Nations Convention on Climate Change, Dated 11 December 1997 and15 November 2002 has effective on 21 November 1998, and 6 February 2003.
6	ISO 14001 and IFC Standard.

2.1 Environmental and Social Policy of Project Owner

The goal and vision on environmental and social issues of the project owner is to operate a business with environmental and social responsibility. The purpose of the environmental policy is to ensure the implementation of mitigation measures and sustainable development. The implementation of the environmental and social measures are as follows:

- ✓ The management of project construction and operation shall be comprehensively implemented by being aware of environmental protection and also to minimize the impact from construction and operation activities by applying best practices.
- ✓ The project development shall apply modern technology that is environment- friendly to avoid and minimize the environmental and social issues from the project implementation.
- ✓ Reduce greenhouse emissions and develop a pilot project on environmental protection in order to comply with the policy, laws and regulations related to the environmental protection in Lao PDR as well as international standards. This also to reduce unnecessary energy use.
- ✓ The project implementation shall ensure the participation of local authority and community in order to contribute toward the implementation of the local development plan.
- ✓ Actively contribute to the local economic and social development plan.
- ✓ Responsible for any damage related to environment and society from the project implementation.
- ✓ Actively implement the obligations on environmental protection by protection, improvement, rehabilitation, control, environmental monitoring, avoiding environmental impacts and deterioration and avoiding gas emissions exceeding the pollutant control standard as well as the national environmental standard. This is to promote environmental quality as well as the green and sustainable development.
- ✓ Ensure that the waste management, noise, water quality and air quality caused by the project shall not exceed the national environmental standards.
- ✓ Actively monitor and report on the environmental and social issues in accordance with regulations;
- ✓ Collaborate and facilitate the relevant local and central authority in the management and monitoring on the implementation of Environmental Management Plan.

Chapter 3 Summry of the Impact and Mitigation

3.1 Overview

The impact levels were evaluated by applying the "Matrix" principle, which is an overall rating that indicates the level of impact. The impact assessment assesses only major and potential impacts, such as impacts on surface water quality, climate change, noise and vibration, social issues, transportation safety, and other issues. The assessment method will use terms with different meanings: Occurrence, Magnitude, Sensitivity, and Ranking as described below

1) Occurrence: It means that it can happen, or it may happen or it may happen unexpectedly.
2) Magnitude: It means that the impacts are significant or severe from those affects that should be seriously addressed and mitigated.
3) Sensitivity: It means that the social and environmental sensitivity are quick to recognize or be quick to respond to the environmental impacts of those activities.
4) Ranking: A rating of the impact resulting from the evaluation results in the three figures above and then divide by 3, in order to calculate the average impact level in the formula as following:

$$Ranking = \frac{(Occurrence + \text{Magnitude} + \text{Sensitivity})}{3}$$

Table 1 Score indicator of the impact level

Impact level	Occurrence	Magnitude	Sensitivity
0	No occurrence	No impact	No impact
1	Not likely to occur	Low impact	Low
2	More likely to occur	Medium impact	Medium
3	Possible to occur	High impact	High
4	High possibility to occur	Very high impact	Very high

Table 2 Indicator of impact average range

Average range of the impact	Color of the impact level	Risk level
<0.5		No Risk
0.5 to <1.5		Low Risk
1.5 to <2.5		Medium Risk
2.5 to < 3.5		High Risk
≥ 3.5		Very High Risk

Table 3 Impact Level during Pre-construction Phase

No	Environmental Elements	No mitigation measure				Mitigation measure			
		Occurrence	Magnitude	Sensitivity	Ranking	Occurrence	Magnitude	Sensitivity	Ranking
1.	**Physical environment**								
1.1	Landscape	0.5	0.5	0.5	0.5	0	0	0	0
1.2	Soil and soil erosion	0.5	0.5	0.5	0.5	0	0	0	0
1.3	Water and water quality	0.5	0.5	0.5	0.5	0	0	0	0
1.4	Air and air quality	0.5	0.5	0.5	0.5	0	0	0	0
1.5	Noise and vibration	0.5	0.5	0.5	0.5	0	0	0	0
1.6	Waste	0.5	0.5	0.5	0.5	0	0	0	0
2.	**Biological environment**								
2.1	Forest and wildlife	0.5	0.5	0.5	0.5	0	0	0	0
2.2	Aquatic animal and living organism	0.5	0.5	0.5	0.5	0	0	0	0
2.3	Protected and conservation areas	0	0	0	0	0	0	0	0
3.	**Socio-economy**								
3.1	Land use	3.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5
3.2	Community and population	1	1	1	1	0.5	0.5	0.5	0.5
3.3	Employment and incomes	0.5+	0.5+	0.5+	0.5+	2.5+	2.5+	2.5+	2.5+
3.4	Infrastructure	1	1	1	1	0.5	0.5	0.5	0.5
3.5	Traffic and transportation	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5
3.6	Assets	3.5	3.5	3.5	3.5	1.5	1.5	1.5	1.5
3.7	Health and Safety	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5
3.8	Archaeological and historical site	0.5	0.5	0.5	0.5	0	0	0	0
3.9	Scenery	0.5	0.5	0.5	0.5	0	0	0	0

Table 4 Impact Level During the Construction Phase

No	Environmental Elements	No mitigation measure				Mitigation measure			
		Occurrence	Magnitude	Sensitivity	Ranking	Occurrence	Magnitude	Sensitivity	Ranking
1.	**Physical environment**								
1.1	Landscape	1	1	1	1	0.5	0.5	0.5	0.5
1.2	Soil and soil erosion	1	1	1	1	0.5	0.5	0.5	0.5
1.3	Water and water quality	2	2	2	2	1	1	1	1
1.4	Air and air quality	3	3	3	3	2	2	2	2
1.5	Noise and vibration	3	3	2	3	2	2	1	1.6
1.6	Waste	3	3	3	3	2	2	2	2
2.	**Biological environment**								
2.1	Forest and wildlife	0.5	0.5	0.5	0.5	0	0	0	0
2.2	Aquatic animal and living organism	0.5	0.5	0.5	0.5	0	0	0	0
2.3	Protected and conservation areas	0	0	0	0	0	0	0	0
3.	**Socio-economy**								
3.1	Land use	1.5	1.5	1.5	1.5	0.5	0.5	0.5	0.5
3.2	Community and population	0.5	0.5	0.5	0.5	0	0	0	0
3.3	Employment and incomes	2.5+	2.5+	2.5+	2.5+	3.5+	3.5+	3.5+	3.5+
3.4	Infrastructure	1.5	1.5	1.5	1.5	0.5	0.5	0.5	0.5
3.5	Traffic and transportation	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5
3.6	Assets	1.5	1.5	1.5	1.5	0.5	0.5	0.5	0.5
3.7	Health and Safety	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5
3.8	Archaeological and historical site	0.5	0.5	0.5	0.5	0	0	0	0
3.9	Scenery	0.5	0.5	0.5	0.5	0	0	0	0

Table 5 Impact Level During the Operation Phase

No	Environmental elements	No mitigation measure				Mitigation measures			
		Occurrence	Magnitude	Sensitivity	Ranking	Occurrence	Magnitude	Sensitivity	Ranking
1.	**Physical environment**								
1.1	Landscape	0.5	0.5	0.5	0.5	0	0	0	0
1.2	Soil and soil erosion	0.5	0.5	0.5	0.5	0	0	0	0
1.3	Water and water quality	2	2	2	2	1	1	1	1
1.4	Air and air quality	3	2	2	2.3	2	1	1	1.3
1.5	Noise and vibration	3	2	2	2.3	2	1	1	1.3
1.6	Waste	1	1	1	1	0.5	0.5	0.5	0.5
2.	**Biological environment**								
2.1	Forest and wildlife	0	0	0	0	0	0	0	0
2.2	Aquatic animal and living organism	0	0	0	0	0	0	0	0
2.3	Protected and conservation areas	0	0	0	0	0	0	0	0
3.	**Socio-economy**								
3.1	Land use	0	0	0	0	0	0	0	0
3.2	Community and population	0.5	0.5	0.5	0.5	0	0	0	0
3.3	Employment and incomes	2.5+	2.5+	2.5+	2.5+	2.5+	2.5+	2.5+	2.5+
3.4	Infrastructure	1	1	1	1	0	0	0	0
3.5	Traffic and transportation	2.5	2.5	2.5	2.5	0.5	0.5	0.5	0.5
3.6	Assets	0	0	0	0	0	0	0	0
3.7	Health and Safety	1.5	1.5	1.5	1.5	0.5	0.5	0.5	0.5
3.8	Archaeological and historical site	0	0	0	0	0	0	0	0
3.9	Scenery	0	0	0	0	0	0	0	0

Chapter 4: Management and Monitoring Plan

4.1 Reason of Management

To comply with the Decree on Environment Assessment No. 21/PMO, 2019, Environmental Management is part of the impact assessment process, the Environmental and Social Management and Monitoring has been prepared for Thanaleng Dry Port & Logistics Park, Vientiane Project which is focussed on the potentially significant impact by the project particularly during the construction and operation phases of the project. The significant impacts includes the physical environment, biological and socio-economic within and the vicinity of the project area.

4.2 Overall of the Environmental and Social Management Plan

4.2.1 Objective and Main Contents

The Environmental and Social Management Plan is the plan that will be implement the mitigation measures regarding the anticipated environmental and social impact by the project development that is expected to occur in the three phases of the project such as pre-construction phase, construction phase and project implementation phase. Those impact and mitigation measures are detailed in Chapter 5 of ESIA. The Scope of work and overall management plan are summarized in the table below:

Objective and main contents of management

Report	Objective of Managment	Management content and process
Environmental and Social Impact Assessment Report	To ensure the implementation of mitigation measures to avoid direct and indirect impact. Management and monitoring to obtain satisfactory results to mitigate the environmental and social impacts that were defined in all environmental components (physical and biological, socio-economic) that are expected particularly during the project construction and implementation	Detailed breakdown of the potential mitigation, the responsibility of each sector, schedules and budgets. Define the contractor's obligations under each project component to let them understand the impacts and their safeguard obligations. Define responsibility and working mechanism for the project implementation, monitoring and evaluation, which obligations will be under the responsibility of the project developer and which obligations will be under the responsibility of the Government for monitoring.

4.3 Organization Chart, Role and Responsibility

4.3.1 Organisation Structure for Management

The obligation for environmental and social management is an important obligation in the case where a development project has conducted the Environmental and Social Impact Assessment (ESIA). The Investiment and Development of Thanaleng Dry Port & Logistic Park Vientiane Project has conducted ESIA. Therefore, the obligation for environmental and social management will include the Ministry of Natural Resources and Environment (MONRE),

which is a directly relevant Ministry, moreover many departments and divisions that belong to this ministry have obligations relevant to environmental management, particularly Department of Natural Resource and Environmental Policy. Besides this ministry, there is another line ministry particularly Ministry of Public Works and Transport which is a directly relevant ministry for the proejct. Vientiane Capital is where the project is located, the organisation under the Vientiane Capital will have the obligation for the implementation the environmental and social management directly through cooperation with the project developer, which is included the Department of Natural Resource and Environment together with other relevant offices of Hatsayfong and Xaysettha District and villages within the vicinity of the project particularly Dongphosy and Nakhoua Tai Village.

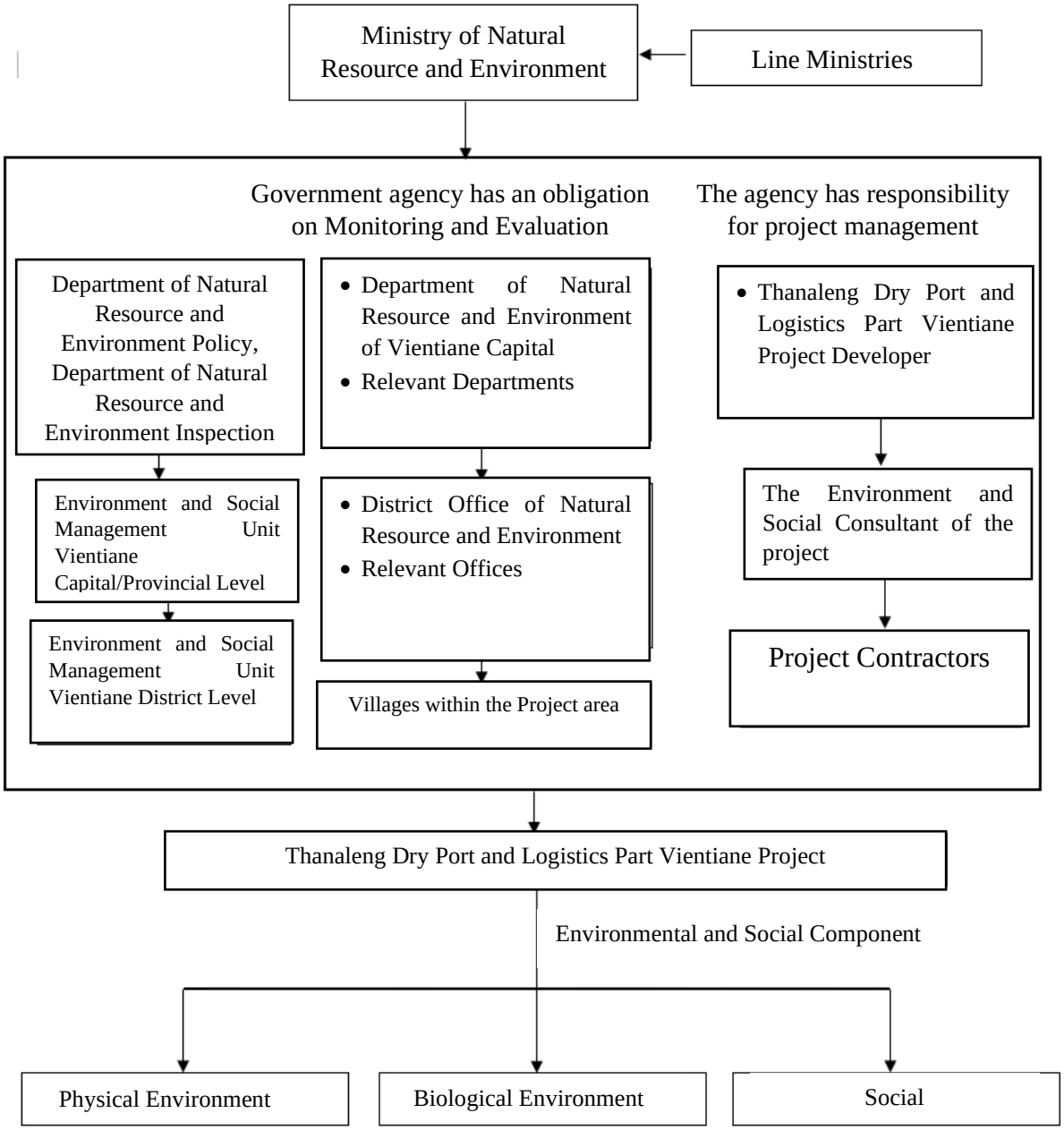


Figure 1 Organisation Chart and Environmental Managment of the Project

4.3.2 Roles and Responsibility

Relevant Government Agency

The various Government agencies have a duty to directly monitor on the implementation of the mitigation measures for the environmental and social impact under the ESIA and Environmeantal and Social Management and Monitoring Plan (ESMMP) and conditions defined in the Environmental Compliance Certificate (ECC). The detailed duties for monitoring of each agecy are follows:

A. **Ministry of Natural Resource and Environment:** the main duty is to monitor the implementation of mitigation measures for environmental and social impact based on the Environmental and Social Impact Assessment report and Environmental and Social Management and Monitoring Plan. This includes the site inspections and providing comments on the monitoring report for the project owner.
B. **Capital Natural Resources and Environment Department:** the main duty is to monitor the implementation of mitigation measures for environmental and social impact based on the Environmental and Social Impact Assessment report and Environmental and Social Management and Monitoring Plan under its responsibility; In addition, it shall summarize and report on the environmental monitoring of project to the Provincial/Capital authority and Ministry of Natural Resources and Environment for their acknowledgement and periodic guidance. However, this department shall implement the monitoring work as assigned by the higher management and under its responsibility.
C. **District of the Natural Resources and Environment Office:** it is the central coordination on the monitoring of mitigation measure implementation for environmental and social impact based on the Environmental and Social Impact Assessment report and Environmental and Social Management and Monitoring Plan under its responsibility. In addition, it shall summarize and report on the environmental monitoring of project to the district authority and the Provincial/Capital Natural Resources and Environment Department for their acknowledgment. However, this department shall implement the monitoring work as assigned by the higher management.
D. **Relevant divisions in central and local levels:** the duty is to participate in the inspection committee organized by the Natural Resources and Environment Division. This is to monitor the implementation of mitigation measures for environmental and social impact related to their responsible sector and also to conduct on the technical research for the environmental management division upon the proposal. In addition, it shall summarize and regularly report the environmental monitoring to the higher management for the acknowledgement.
E. **Division responsible for the investment project:** Despite of the participation in the monitoring committee organized by the Natural Resources and Environment Division, the monitoring work shall be implemented in accordant with laws and contracts.

Project Developer

A. Environment Management Unit of The Project

The key organization responsible for the Project's ESIA and Environmental and Social Management and Monitoring Plan (EMMP) implementation is the Project's Environmental Management Unit, that will be responsible for supervision of the project construction contractors. Under the Government's Enviromental Management Unit who has duty to monitor , evaluate, supervise and advise the project to allow the project developer to supervise the contractors for each project components (where impact from construction activities of the construction contractor results from neglect of environmental Management Plan implementation). The Government's Environmental Management Unit will work together with the Project's Environmental Unit for some activities for environment management, therefore, some environment management obligation, both organization of Government and Project will join for monitoring and evaluation which is referred to as Internal Monitoring.

The Project's Environment Management Unit may work together with an Environmental and Social Consultant Company, that will be responsible for technical planning for all the mitigation measures implementation for the environment as well as prepare the plan and environmental impact rehabilitations. The Project's Environmental Management Unit also has to ensure that the construction contractor implement all their environmental management obligations which is defined in the contract. The project developer also has responsibility to preparw the report of their responsibility on environmental management implementation to submit and report to the Environmental Management Unit at the Ministry, Province and District level for acknowledgement in order to work closely with government organizations as necessary.

B. Construction Contractor

The Project's Construction Contractor/subcontractor: The Project's Construction Contractor/subcontractor will be responsible for the implementation the mitigation measures to avoid and minimize the environmental and social impact, particularly the project's worker and public health impact. The construction contractors are also required to apply the procedure to ensure quality compliance with the National Environment Standards and has to follow the environmental management system ISO 14001. All of these shall be under the supervision of the Environment Specialist of the Project.

4.3.3 Project Implementation Monitoring

Monitoring is the key component of the project activities and implementation plan in order to allow the company to have an effective and continuous implementation. The Project's Environmental Management Unit will be responsible for monitoring implementation. Therefore, the monitoring systems have to be developed together with the monitoring plan and will be implemented as follows:

Table 6 Monitoring activities within the project implementation plan

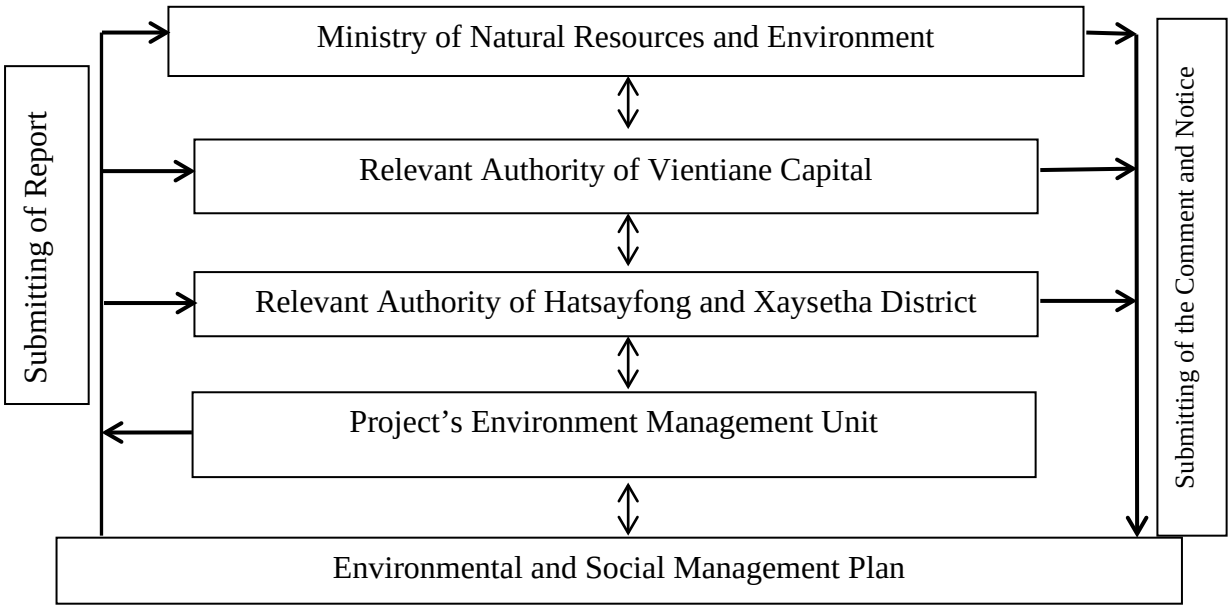
NO	Monitoring	Responsibility			
		Project	District	Vientiane Capital	National
I. Pre-Construction Phase					
1	Conduct the ESIA study to get approval the Environmental Compliance Certificate (Consultant Company)	Entire study phase	Entire study phase	Entire study phase	Entire study phase
2	Project information disclosure to the local people during the ESIA study (by consultant company)	Involve every time.	Involve every time	Involve every time	Involve every time
II. Construction Phase					
1	Air Quality Management (D)	Daily	Monthly	Quarterly	Semi-annual
2	Noise and Vibration Management	Daily	Monthly	Quarterly	Semi-annual
3	Construction wastewater management	Daily	Monthly	Quarterly	Semi-annual
4	Construction waste management	Daily	Monthly	Quarterly	Semi-annual
5	Worker camp Management	Daily	Monthly	Quarterly	Semi-annual
6	Traffic – Health and Safety Management	Daily	Monthly	Quarterly	Semi-annual
7	Social issues Management	Daily	Monthly	Quarterly	Semi-annual
III. Operation Phase					
1	Effluent Management	Monthly	Quarterly	Annually	
2	Waste Management	Monthly	Quarterly	Annually	
3	Social Issues Management	Monthly	Quarterly	Annually	

Monitoring Schedule	Frequency of Monitoring – Annual Monitoring											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Project Owner	●	●	●	●	●	●	●	●	●	●	●	●
National Level						●						●
Provincial Level			●			●			●			●
District Level	●	●	●	●	●	●	●	●	●	●	●	●

4.3.4 Reporting

The report shall describe the environmental and social management and monitoring implementation and be submitted to the relevant government agency at district, Vientiane Capital and national level, shall be reported in periodic as follows:

- Monthly Monitoring Report
- Quarterly Monitoring Report.
- Annualy Monitoring Report.



4.4 Management and Monitoring Plan for Construction Phase

4.4.1 Activities and Works during the Project Construction Phase

Contractor's works and activities during construction phase of the proposed Thanaleng Dry Port & Logistics Part, Vientiane Project will include site clearance, project infrastructure construction and facilities/equipment installation as follows:

(1) Site clearance for project boundaries: Site clearance for foundation, ground levelling to meet the designed structure level within the construction site or project area in order to meet the required level in each area.

(2) Construction work implementation: construction of Administration and customer services Building, office/shipping/bank/insurance company for rent, food court, truck driver rest area, fuel station, truck maintenance yard, container maintenance and clearing yard, specific warehouse (Frozen warehouse, close rental warehouse and general rental warehouse), fuel warehouse, hazardous warehouse and disinfect station, Plant and animal quarantine area, truck weighing scale with complete equipment, cross docking station and Open Warehouse, cross docking station, existing container yards (CY), one-stop checkpoint, truck parking yard and general car park.

4.4.2 Management and Monitoring Sub-Plan for the Construction phase

To mitigate the environmental and social impacted by a development project, the Management and Monitoring Sub-Plan has been prepared to guide the project developer particularly construction contractors who have direct responsibility for potential impact management from construction activities and project operation. Therefore, Sub-Plans as below indicate the direction and support during the implementation and potential impact management which is expected to occur, directly and indirectly, both short-term and long-term. For easy review and implementation ofESMMP, the Sub-Plan for the proposed Thanaleng Dry Port and Logistics Park Project will be developed foreach sub-plan which has potential impact by the project only.

Thanaleng Dry Port and Logistics Park Project was designed to construct office building, warehouses and road to connect to Friendship Bridge, construction of the cross-docking station and other activities within the 228.5 ha of project area. In accordance with the project activities and the result of the ESIA study, the environmental management and monitoring sub-plan for the project construction phase were identified as below:

1	SP1	Water Quality Management
2	SP2	Air Pollution Management (Dust from the construction activities)
3	SP3	Noise and Vibration Management
4	SP4	Solid Waste Management
5	SP5	Worker Camps and Construction Management
6	SP6	Traffic Around Project Area Management
7	SP7	Occupational Health and Safety Management
8	SP8	Emergency Preparedness and Response Plan

(1) Sub-Pan1 (SP1): Water Quality Management

SP1: Water Quality Management		
No.	**Purpose**	**Implementation Description**
1	Project Period	Construction Phase
2	The location of water use and pollution control	▪ The project facilities construction site; ▪ Temporary and permanence worker camp; ▪ Engine Maintenance site for the construction of the project
3	Public Health and Safety	Water quality, Health and Safety

SP1: Water Quality Management		
No.	**Purpose**	**Implementation Description**
4	Physical and biological environment and socio-economic Impact.	▪ Surface water and groundwater quality will be changed due to release untreated wastewater ▪ worker and officer health impacted due to contaminated water and drinking water provided aquatic and ▪ Impact on the land and water ecosystems
5	Consequents impact by project construction activities	▪ Wastewater from the daily water use by the numbers of officers and workers such as black-water and grey-water ▪ Wastewater from the construction activities: construction tools and equipment cleaning ▪ Sedimentation due to the soil excavation, dredged, landfilling for ground levelling for the construction of the project facilities will be caused water turbidity,
6	Consequences of the Environmental impacts	▪ Negative impact on aquatic animals - terrestrial animals and human health, particularly project's officer and worker ▪ Soil and natural water resource contamination
7	Characteristics of Impact	Water quality and water use impact will be occurring in the short term, long term, directly and indirectly, minor and significant impact and exceed the national environmental standard
8	Mitigation measures control/management	▪ Sedimentation and turbidity control: the project must avoid and suspend any work related to soil excavation-dredges during rainy periods to reduce mud and sewage drains into the water sources. ▪ Oil stain and chemical contaminant control: construction equipment or tools cleaning must be done within the specific area with low risk to contaminate soil or water sources, the project should provide contract including fine condition for construction contractor, to be an obligation to the contractor to wash all type of machinery trucks and all construction equipment including the release of untreated wastewater from construction machine garage. ▪ The area of concrete batching plant for construction and project garage must be located far from the ditches or waterways to reduce sewage and chemical compounds draining into the river. ▪ Sewage issues from residential areas and other use of staff and workers: the contractor shall provide sufficient hygienic bathrooms-toilets for workers. After the construction has completed, all bathrooms-toilets shall be removed as well as restore the land conditions to be as good as before. ▪ Construction waste must be collected and handled properly, then, it should be sent to a specified municipal

SP1: Water Quality Management		
No.	**Purpose**	**Implementation Description**
		dumpsite. The project shall provide training to staff and workers to have a better understanding about waste impacts, as well as waste management, and prohibit all littering into water sources, any violation, shall be fined or fired.
9	Monitoring and Evaluation Methodology	▪ Visual Investigation at maintenance area, fuel storage and fuel refilling method, hazardous material storage area such as used oil, oil and hydraulic oil. ▪ Water quality monitoring will be started upon the construction work commencement to control wastewater quality that will be released to the natural water resource, ▪ Wastewater quality monitoring shall be implemented in daily basic ▪ Water quality sampling and analysis shall be conducted in monthly–quarterly basic throughout the construction phase.
10	Identify duration implementation	From the beginning of the project construction phase until the project implementation
11	Frequency of Monitoring	Project's Environmental Management Unit shall be conducted Monthly Monitoring to report to the Government. While the Government monitoring will be conducted quarterly monitoring
12	Environmental Training on Water Quality of the Project	▪ Training on water sampling and basic water quality analysis ▪ Provide and introduce regular training on environmental work and awareness to all project officers/workers
13	Equipment	Use the tools and equipment for water contamination analysis and general water quality for consumption.
14	Environmental Standard and Reference	▪ Law on Water and Water Resource, 2017, ▪ Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA, 2012 ▪ National Environnemental Standard No 81/PMO, 2017
15	Responsibility Agency	▪ Project construction contractor shall be responsible for water quality management measure. ▪ The construction contractor shall be established their owned environment management unit or technical officer, such unit shall be responsible for internal monitoring and report to the relevant government agency. ▪ Project developer shall be responsible for water quality management during the operation phase.
16	Budget	Management and monitoring budget for the relevant government agency shall be responsible by the project developer, as described in this ESMMP. For the company's

SP1: Water Quality Management		
No.	**Purpose**	**Implementation Description**
		water quality monitoring budget and project consultant company is upon the agreement between project and consultant.

Water sampling station and water quality parameters

Water sampling station	Parameters	Frequency
Construction Phase		
1. The pond that received effluent from the project	Temperature	Project EMU every 1-3 Month/time
	pH	
	Conductivity	
	Dissolved oxygen (DO)	
	Biological Oxygen Demand (BOD_5)	
	Total Suspended solids (TSS)	
	Total Dissolved Solids (TDS)	
	Oil and Grease	
	Faecal coliforms	
	Other as necessary	

Remark: Each measurement result of water quality parameters shall be compared with a quality standard as specified in the National Environmental Standard, No. 81/PMO, 2017 and other relevant standards.

Water quality monitoring throughout the construction and operation phase will include water sampling and water analysis in the laboratory. The budget for one sample analysis (will include analysis cost, equipment rental, sample bottles and transportation but does not include the water sample collector) equal USD250/sample. (These budget will be the company budget to be made available for the water quality monitoring)

(2) Sub-Plan (SP2): Air Pollution Management (Dust from Construction)

SP2: Air Pollution Management		
No	**Purpose**	**Implementation Description**
1	Project period	Construction Phase
2	The location that will have Air Pollution Occurrence	▪ Project Construction Sites ▪ Material - Equipment transportation Road.
3	Environmental and Social issues	Air quality, health and safety of the project's officers and workers as well as residents and travelling people in the project vicinity

SP2: Air Pollution Management		
No	**Purpose**	**Implementation Description**
4	Physical, biological environment and socio-economic Impact	Dust and particulate matters from the construction activities could have negatively affect the officers' and workers' health who are working and also for people who live nearby.
5	Consequences Impact by the Project Construction Activities	▪ During this period, there are some construction activities such as: soil excavation, landfilling, ground leveling, soil compaction, for foundation works, the storage of construction materials like soil, gravel and sand with blowing wind, may produce dust from soil and sand. The disposal of construction materials from high building constructions to the ground the cleaning of construction litters especially, in the construction site, would also spread dust particles. In addition, the burning of fuel from vehicle use and heavy machines in construction activities will create CO, HC, NO_x ▪ Solid waste burned without control and separation.
6	Consequences effect from the Environmental impacts	Negative impact on air quality and staffs and health impact to workers, also people who are living nearby the construction sites and visitors.
7	Characteristic of Impact	Air pollution impact will occur in the short term, long term, directly and indirectly, minor and significant impact and exceed the national environmental standard.
8	Mitigation measures control/management	▪ Spray, sprinkle the ground surface where there has been excavations and where the soil, gravel, sand accumulate daily for at least 2 times/day (in the morning and evening) or more than twice if excessive dust is noted. ▪ The materials transport into the construction area must have the proper bed truck cover to prevent any materials falling on the ground that may cause dust and accident to the people using this access road. ▪ Unloading soil, gravel, sand should consider the weather conditions, no unloading when there's strong wind to prevent the scattering of soil, sand particles and for long periods of soil and sand stockpiling should be covered too. ▪ Arrange, locate machines and construction works at a long distance from affected people. ▪ Machines and equipment which are only use occasionally shall be turned off and should not be

SP2: Air Pollution Management		
No	**Purpose**	**Implementation Description**
		turned on when not in use to reduce the release of pollution from engines. ▪ Maintain and repair machines and construction equipment frequently in the best conditions, to reduce the release of pollution from engines. ▪ Provide awareness raising and set out rules that workers are prohibited to burn solid waste in the construction site. ▪ Workers should be provided for sweeping, clearing and cleaning all access road in the construction area, including the front area of the entrance daily throughout the construction phase ▪ Speed should be limited for the transportation vehicles, especially in the community area to 30 km/hour. ▪ The transportation vehicles' wheels must be washed when passing in-out of the project construction site. ▪ Staff responsible for public relation work should be assigned who should frequently communicate with the community living close to the construction area if there are any grievances raised regarding dust issues. ▪ Provide the dust protection gear to staffs/workers who work with engines and those with activities concerning the spread of dust ▪ Strictly implement in accordance with the regulations and Law on Construction No.05/NA Dated 2009
9	Monitoring and Evaluation Methodology	▪ Visual Investigation for dust pollution
10	Identify duration implementation	From the beginning of the project construction phase until the project construction completed
11	Training	▪ Provide training for heavy machine and lifting-down controller ▪ Provide awareness raising and enforcement to wear the proper PPE (wearing mask, Wear safety clothing, dust protection and other equipment) at the air pollution risk site. ▪ Provide awareness raising on waste management. Burned and improper solid water disposal is prohibited

SP2: Air Pollution Management		
No	**Purpose**	**Implementation Description**
12	Equipment/Tools	▪ Environmental Specialist on Air Pollution Control to review and provide the reason ▪ Environmental unit which includes such specialist shall be established the project developer.
13	Environmental Standard and Reference	▪ Law on Construction (05/NA, 2009), ▪ Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA, 2012 ▪ National Environnemental Standard No 81/PMO, 2017.
14	Responsibility Agency	▪ Project construction contractor shall be responsible for Air Pollution Management ▪ Director of the Construction Contractor shall be certified the Air Pollution Management Plan. ▪ The construction contractor shall be established their owned environment management unit or technical officer, such unit shall be responsible for internal monitoring and report to the relevant government agency.
15	Budget	Management and monitoring budget for the relevant government agency shall be fully responsible by the project developer, as described in this ESMMP. While the project consultant fees is upon the agreement between project and consultant.

(3) Sub-Plan (SP3): Noise and Vibration Management

SP3: Noise and Vibration Management		
No.	**Purpose**	**Implementation Description**
1	Project Period	Construction Phase
2	The location will have noise and vibration occurrences	▪ Project Construction Sites ▪ Material and Equipment transportation Road.
3	Environmental and Social issues	▪ Noise and vibration issues, health and safety of the project's officer and workers including residents in the project vicinity
4	Consequences Impact by the Project Construction Activities	All types of construction activities will cause some disturbance noise. During this period, activities that require use of heavy machines including, drilling, ground leveling, soil excavation or in case of foundation piling, foundation constructing, the construction of infrastructures of each component, decoration works, equipment transportation in-out construction site.

SP3: Noise and Vibration Management		
No.	**Purpose**	**Implementation Description**
5	Consequences effect from the Environmental impacts	Disturbance and health impact to the Project's construction worker. Noise and vibration disturbance to the community nearby area
6	Characteristic of Impact	Effects from noise and vibration will occur in the short-term, long-term, directly and indirectly, minor and significant impact and exceed the national environmental standard
7	Mitigation measures control/management	▪ Build temporary fences to reduce loud noise from ground level construction activities ▪ Select construction tools and equipment that make less noise ▪ Construction tools and equipment that are only use occasionally shall be turned off while not in use, to reduce loud noise ▪ Maintain and repair machines and construction equipment frequently to be in its best condition and will reduce loud noise. ▪ Set construction schedule for noisy works such as: avoid the night time from 19:00PM – 6:00AM, if it is necessary to work during the night time, must avoid activities that create loud noise and notify the village authorities or residents nearby beforehand. ▪ Measure the noise level frequently during the construction phase or assign staff responsible for the public relation works and communicate with residents living nearby the construction area, if any grievance about loud noise occurred it shall be dealt with immediately. ▪ Transportation of huge construction materials to construction site, which pass through community area shall be carefully done to prevent any falling subjects that may cause loud noise ▪ Speed limit for transportation trucks shall not exceed 30 km/hour for community area and do not use horns or rev engines if not necessary, enforce the truck drivers to follow the traffic rules strictly, put up the warning signs in the construction site, speed limit sign for all passing vehicles through construction area, especially the sensitive area. ▪ Provide hearing protection gears to staffs/ workers who work with machines and those exposed to loud noise.

SP3: Noise and Vibration Management		
No.	**Purpose**	**Implementation Description**
8	Monitoring and Evaluation Methodology	Use noise and vibration measurement equipment which has a certified standard. The selected location shall be the heavy construction site and sensitive area in the village in the vicinity of the project.
9	Identify duration implementation	From the beginning of the project construction phase until the project construction complete.
10	Training	▪ Provide training for heavy construction machine controller such as Forklift and Reach stacker. ▪ Provide awareness raising and enforcement to wear the appropriate PPE (Earplugs, mask, safety cloth and other equipment) in the loud noise risk area. ▪ Provide training on the noise and vibration measurement
11	Tools/Equipment	▪ Noise and vibration monitoring equipment (Portable) ▪ Environment Specialist – Noise and Vibration to review and feedback ▪ Environmental Management Unit shall be established and included the this specialized
12	Environmental Standard and Reference	▪ National Environnemental Standard No 81/PMO, 2017 ▪ Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA, 2012.
13	Responsibility Agency	▪ Project construction contractor shall be responsible for Noise Pollution Management ▪ Director of the Construction Contractor shall be certified the Noise Pollution Management Plan. ▪ The construction contractor shall be established their owned environment management unit such the unit shall be responsible for internal monitoring and report to the relevant government agency.
14	Budget	Management and monitoring budget for the relevant government agency shall be under full responsibility of the project developer, as described in this ESMMP. While the budget for the project consultant is upon the agreement between project and consultant.

(4) Sub-Plan SP4: Solid Waste Management

SP4: Solid Waste Management		
No	**Purpose**	**Implementation Description**
1	Project Period	Construction Phase
2	The construction site that will be generated the solid waste	▪ Project's proposed construction sites ▪ Project's machine maintenance area. ▪ Improper solid waste disposal area that made the solid waste spread out.
3	Environmental and Social issues	Solid waste, health and safety of the project's officer and workers as well as residents in the project vicinity area. The wastewater generated by solid waste and will impact to the surface water and groundwater.
4	Physical and biological environment and socio-economic Impact.	Construction waste may impact on environmental and human health. Disposal cost shall be balanced with the environmental impact. The best balancing method on sustainable solid management is to reduce, reuse and recycle.
5	Consequences Impact by the Project Construction Activities	The construction waste such as: excavated soil waste, plastic wrappers, not standardized materials or not in accordance to the requirements, leftover construction waste (wood waste, steel, nail, brick and other waste), hazardous waste that contains engine oil, and other waste from staffs and workers daily use.
6	Consequences effect from the Environmental impacts	▪ The solid waste will make the surface water and groundwater contaminated from spill during solid waste storage, transport and disposal. ▪ Health impact due to improper hazardous waste disposal. ▪ Air pollution during the improper solid waste burning of solid waste burning without waste separated
7	Characteristic of Impact	▪ Solid waste: including the waste from household and waste from daily life using. ▪ Construction waste: including waste generated from construction directly and incidentally such as wood waste, cement waste, gravel spoil brick, Scrap metal and other waste). ▪ Hazardous waste: potential environmental and health impact, which has a liquid and solid form. Contaminated oil or engine oil will be managed the same as hazardous waste management. The hazardous material will have a long term side effect due to chemicals accumulate or things that causes serious disease or genetic mutation.

SP4: Solid Waste Management		
No	**Purpose**	**Implementation Description**
		▪ Chemicals waste such as used lubricant oil and oil, battery and electronics, color and color mixture, all of those are classified as hazardous waste. The batteries shall be re-used. The ash at the bottom of the incinerator must also be considered as hazardous waste and properly disposed of.
8	Mitigation measures control/management	▪ Waste from construction activities that can be reused should be separated and reused or sold to related sectors to reduce the amount of waste for disposal, for those that can't be reused should be stored properly and dispose of when there is proper volume. ▪ Provide sufficient number of bins for workers' camps and separate the waste ▪ Control waste burning or littering and provide awareness raising event for staffs to understand about the disadvantages of waste and know the proper disposal method, any violation should be fined. ▪ The construction contractor shall coordinate and make a contract with related sectors such as: Vientiane City Office for Management and Service, waste collection company who are responsible for daily waste disposal. ▪ Clear-clean trash bins every time after the waste have been collected for disposal to reduce the chance of bacteria growth. ▪ The construction area should be clean daily and stockpile waste within the project area.
9	Monitoring and Evaluation Methodology	▪ Visual Investigation the construction site and project implementation ▪ Inspection the solid waste handling at each construction site and accommodation area.
10	Identify duration implementation	Monthly monitoring by the Project's Environmental Unit, quarterly monitoring by the government's Environmental Management Unite during the construction and operation phase.
11	Training	▪ The information on the negative impact of solid waste shall be disclosed to workers and residents in the project vicinity. ▪ Disclosure the law and regulation on environmental protection, regulation and proper solid waste disposal methodology.

SP4: Solid Waste Management		
No	**Purpose**	**Implementation Description**
12	Equipment	▪ Solid waste disposal should have adequate equipment such as waste bins, truck for waste transportation and other tools that relevant to the waste disposal. ▪ Monitoring Officers should have the knowledge and understanding of solid waste disposal. ▪ Use the water sampling equipment to collect the water from the landfill.
13	Environmental Standard and legislation Reference	▪ Law on Environmental Protection, ▪ National Environnemental Standard No 81/PMO, 2017. ▪ Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA, 2012
14	Responsibility Agency	▪ Project construction contractor company shall be responsible for management measures on the solid waste disposal issues ▪ Director of the Construction Contractor shall be certified the Solid Waste Management Plan. ▪ The construction contractor shall be established their owned environment management unit or technical officer, such unit shall be responsible for internal monitoring and report to the relevant government agency. ▪ Project developer shall be responsible for the management measure on solid waste management issues
15	Budget	Management and monitoring budge for the relevant government agency shall be fully responsibility by the project developer, as described in this ESMMP. While the project consultant company fees is upon the agreement between project and consultant.

(5) Sub-Plan (SP5): Worker Camp Construction and Management

SP5: Worker Camp Construction and Management		
No	**Purpose**	**Implementation Description**
1	Project Duration	Construction Phase
2	The construction site and management	▪ Construction worker camp and the project worker camp.
3	Environmental and social Issues	▪ Health and safety risk of construction; ▪ Health risk due to the lack of sanitation system and good hygiene. ▪ Wastewater issues from the camp due to inadequate treatment, solid waste generated and improper waste disposal due to no proper landfill

SP5: Worker Camp Construction and Management		
No	**Purpose**	**Implementation Description**
4	Mitigation measures control/management	▪ *Tidy and safety Management:* all workers who are staying at the camp shall strictly follow the camp regulation on entry and exit, regulation on eating, responsibility for environmental protection ▪ *Wastewater management from accommodation and water used by the staff and worker*: shall be provided with the toilets for workers, around the construction control buildings and install wastewater treatment tank. ▪ *Solid Waste Management* Project developer or construction contractor shall be coordinate with the district VDDA to collect, transport and dispose to meet the standard and are able treat the waste, waste to separated and disposed of in a different areas, improper waste burning will generate and release CO2, CO and SO2 exceeding the national environmental standard, if really necessary, waste shall be separated, particularly, infected waste and chemical contaminated waste such as electricity line or plastic should not be burned.
5	Monitoring and Evaluation	▪ Water quality monitoring for consumption water and wastewater from the worker camp. ▪ Inspection of the solid waste collection facilities at each construction site and accommodation area ▪ Inspection on solid waste transportation, landfill or disposal area is meet the standard or not.
6	Define the implementation duration	From the beginning of the project construction phase
7	Monitoring Frequency	Monitoring frequency, Monthly monitoring for project's environmental management unit to report to a government agency. While the government sector conducts quarterly monitoring.
8	Training on the Project Environmental	▪ The information on the negative impact of solid waste shall be disclosed to all workers ▪ Disclosure the law and regulation on environmental protection, regulation, and solid waste disposal methodology. ▪ Provide training to officers and workers who are responsible for waste handling to responsible for their works, disposal in the correct manner, ensure that has no waste spill. ▪ Provide training on wastewater monitoring including maintenance and fixing the wastewater treatment systems.

SP5: Worker Camp Construction and Management		
No	**Purpose**	**Implementation Description**
		▪ Regularly provide and introduce training and awareness raising of the environment for all project workers.
9	Tools/equipment	▪ Solid waste disposal should have adequate equipment such as waste bins, truck for waste transportation and other tools that relevant to waste disposal
10	Environmental Standard and legislation Reference	▪ Law on Construction (No.05/NA, 2009) ▪ Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA, 2012 ▪ National Environmental Standard No 81/PMO, 2017
11	Responsibility Agency	▪ Project construction contractor company shall be responsible for wastewater and solid waste mitigation management. ▪ Director of the Construction Contractor shall be certified the Solid Wastewater and Solid Waste Management Plan ▪ Shall be conduct internal Monitoring and report to relevant government agency.
12	Budget	The management and monitoring budget for the relevant government agency shall be responsible by the project developer, as described in this ESMMP

(6) **Sub-Plan SP6: The entry-exit traffic control at the project area**

SP6: The entry-exit traffic control in the project area		
No	**Purpose**	**Implementation Description**
1	Project period	Construction Phase
2	Management Area	The project access road including the public road using for the project transport
3	Environment and social Issues	During the construction phase, the project components consists of various construction activities which affect the transport and traffic systems along the public roads and other roads used for the traffic and transport of construction material The increase of vehicles in this area particularly vehicles in-out the project and customers will affect the traffic
4	Potential impact by the project's traffic /transport	▪ The transport of heavy construction material without the traffic controller, the exceeded speed limit and disregard of the traffic rule. ▪ The pollution emission caused by the transport of construction material, if the vehicles are not maintained and no water spraying along the unpaved road particularly the dry season. ▪ The transport will affect the traffic of local people such as: the traffic will be delay due to the transport of truck pass through the project area

SP6: The entry-exit traffic control in the project area		
No	**Purpose**	**Implementation Description**
5	Management/control of Measures	▪ Project name sign and direction sign for entry-exit, in front each construction site. ▪ Install warning sign for construction area and trucks' passing in-out through the junction between Thadeau road, Dongphosy village to Xiengda road before reaching the construction site for 200 m in order to warn all road users when passing the construction points ▪ If possible, provide a sign or sticker, with project name, contractor, including coordinator's contact number that can be contacted for information and complaint, the sign should be of suitable size that can be clearly seen from the side of the construction transportation trucks; ▪ Specify transportation and trucks passing in-out the project to only operate out of rush hours in accordance to traffic rules, if it is necessary to work, there must be workers facilitating the traffic. ▪ Properly plan for the huge material transportation when passing through community area, to be minimized the duration and to be very careful. ▪ Plan beforehand for all period that will have a lot of transportation trucks using the roads such as cement, soil, gravel/sand transportation trucks, that will be passing in-out of the project to prevent the trucks parking on the side road ▪ During the rush hours, all project vehicles shall be organized properly or park at prescribed points, do not park on the side road to avoid blocking the traffic and destroy the scenery; ▪ Parking of any vehicle at project vicinity during the rush hours, if it can't be avoided, must be accompanied by signaling for road users with symbols or signs. ▪ Repair and maintain all project transportation vehicles to be in their best conditions to avoid break downs while they are on the road which may cause the traffic jam ▪ Assign e project coordinator for grievance complaint, in case of any annoying grievance from project transportation.

SP6: The entry-exit traffic control in the project area		
No	**Purpose**	**Implementation Description**
		▪ Set out the regulations and rules for the transportation truck drivers, to strictly follow traffic rules accordingly, especially truck's weight and speed limit shall not exceed 30 km/hour ▪ All transportation trucks passing in-out of the project, must have the bed truck covers to avoid any falling objects, if there are any falling incident, staffs must be informed to clean out in order to prevent any accident which may cause traffic jams.
6	Monitoring and evaluation Methodology	The Project Environment Unit and the government sector shall regularly monitor the site inspection during the heavy transport. The monitoring should be in accordance with the management plan and mitigation measures as described above. In addition, it shall be based on the regulations and relevant legislation. In case, the accident occurred, it shall be mitigated and leant from it.
7	Implementation Schedule	Pay attention on the management and monitoring during the construction phase due to the increase of transport and traffic serving for the construction activities pass through the project area.
8	Monitoring Frequency	The Project Environment Management Unit shall monitor on a monthly basis. However, the government environmental management unit shall monitor on quarterly basis (as described in the ESMMP)
9	Training	The Project Environment Unit should provide training to the staff and workers particularly the staff responsible for the transport-traffic in accordance with the mitigation measures related to the traffic. In addition, the awareness raising on environmental issues caused by the traffic shall be provided as well.
10	Legislation and Environmental Standard	▪ Law on Construction (05/NA, 2009) ▪ Law on Transport ▪ Law on Road Traffic ▪ The National Environmental Standard, No.81/GO, 2017
11	Responsible Division	▪ The construction contractor shall be responsible for the management/control measures on traffic and transport ▪ The construction contractor shall establish its Environmental Management Unit which is responsible for the internal monitoring and report to related government agency.
12	Budget	The management and monitoring budget for the relevant government agency shall be responsible by the project

SP6: The entry-exit traffic control in the project area		
No	**Purpose**	**Implementation Description**
		developer as described in this ESMMP. However, the budget for the consulting companies is upon the agreement between the project and consultant.

(7) **Sub-plan SP7: Health and Safety Management**

SP7: Health and Safety Management		
NO	Purpose	Implementation Description
1	Project period	Construction Phase
2	Management Area	▪ Construction area for the project components ▪ Access road to the project and camp ▪ Other related project areas
3	Issues related to the environment and society	▪ Health and safety of the project staff and workers ▪ Health and safety of people living nearby and people pass through the project area
4	Construction and operation activities caused the impact	The construction activities may cause impact on health to workers and people living nearby the project area including: dust from the construction activity, pollution from the engine burning oil and construction material, disturbance noise from the construction activity and accidents from the transport of construction material and traffic
5	Control/management of mitigation measures	▪ Provide personal protective equipment to the construction workers based on their work tasks including: reflective clothing, protective helmet, shoes and gloves as well as the first aid kit at each construction site. ▪ Maintenance-repair of equipment to keep it in good condition in order to avoid the accidents from the equipment and to reduce the pollution emission from the engine burning oil affected to the health ▪ Raising awareness on the machinery using guide and the construction equipment to the construction workers ▪ Install the warning sign, reflective rope or blockage at the construction site ▪ In case the construction activities were operated at the night time, there shall install the sufficient lights for the operation ▪ Control the speed of the project vehicles to be in the speed limit and also supervise the drivers to strictly implement on the traffic regulation. In addition, there shall control the weight and regularly maintain the transport trucks to be in good conditions. However, the

SP7: Health and Safety Management		
NO	Purpose	Implementation Description
		transport traffic shall be operated in the appropriate not in the peak hours in order to reduce accidents ▪ There shall be an accident record with description of the cause, resolution and the loss occurred.
6	Monitoring and evaluation methodology	▪ The relevant division responsible for the monitoring and evaluation shall review the mitigation measures related to the health and safety of the social and natural environment. This is to ensure that the project or construction contractor has implemented the mitigation measures or not. ▪ Observe the access road to the project area to ensure that traffic sign or lights were installed sufficiently or not. ▪ Install warning signs at the construction site to indicate the danger of risky work to ensure that the workers are fully aware on the risks. ▪ The drinking water and general water shall be sufficient provided at the accommodation area as well as others hygiene facility as required ▪ The inspector shall have expertise in environment, health and safety who is qualified to monitor and assist the project and construction contractor for their improvement.
7	Implementation Schedule	The Environmental management unit shall conduct the monthly monitoring and the state environmental division shall monitor at least once for three months.
8	Training	▪ Provide the information on the health and safety to workers and people living nearby the project area ▪ Raise awareness on the health and safety related to the construction ▪ Provide the training to the staff and workers responsible for the project construction and advise them to wear the protective clothing while working ▪ Provide the training on the monitoring and data collection on health and safety to the environmental staff
9	Reference legislation and environmental standard	▪ Law on hygiene, disease and health promotion (Amendment), No.08/NA, 2012 ▪ Law on Labor (Amendment), No.021/NA, dated on 24 Dec 2013
10	Responsible Division	▪ The construction contractor shall be responsible for the management-prevention measures on health and safety to the staff and workers ▪ The construction contractor shall certify the health and safety plan

SP7: Health and Safety Management		
NO	Purpose	Implementation Description
		▪ The construction contractor shall establish the internal environmental management unit which is responsible for reporting to the related state sector
11	Budget	The budget for the management and monitoring for the relevant government agency shall be responsible by the project developer as described in this ESMMP. The budget for the project consultants is upon the agreement between the project and consultants.

(8) Sub-plan SP8: Emergency Response Plan

SP8: Emergency Response Plan		
No	**Purpose**	**Implementation Description**
1	Project period	Construction Phase
2	Area to be readiness for the emergency response	▪ Construction area for project components ▪ The project access road and camp ▪ Other related areas
3	Issues related to the emergency	▪ The incident occurring to the project staff and workers ▪ The incident occurring to people living nearby the project pass through the project area which cause the accident ▪ The incident occurring to the natural environment in and nearby the project area including: erosion, flooding, fire and others.
4	Construction and operation activities caused the accidents	▪ Construction workers who work in high places are at risk from accidents ▪ The transport of construction material along the public road and other roads may cause the accident ▪ Emergencies can occur through illness of the staff and workers during their every day life and needs to be dealt with immediately. ▪ The soil erosion during the land clearance may cause damage in production land of people living nearby
5	Control/Management of Mitigation Measures on the emergency response	The project shall prepare the emergency response plan for the construction phase: ▪ Provide the medical equipment and first aid kit to response incidents occurring from high risk works ▪ Provide the fire extinguishers at the accommodation, warehouse-flammable material ▪ The accommodation and other working places shall be provided with a fire escape ▪ The usage of heavy machinery including; fork lift, excavator and transport trucks shall be careful and ensure the security when stopping and parking. ▪ Install the emergency alarm and inform the workers to be aware when there is an emergency incident ▪ Prepare and install the warning system as required.

SP8: Emergency Response Plan		
No	**Purpose**	**Implementation Description**
6	Monitoring and Evaluation Methodology	▪ Inspect the construction site and implementation areas to prepare and install the safety equipment for the emergency response ▪ Check the medicines and first aid kit to ensure that it is adequate or not.
7	Training	▪ Provide the information on the access of emergency warning system to workers as well as people living in the nearby project area ▪ Provide the training to workers on the usage of equipment or protective equipment including: the user guide for extinguisher and water piping ▪ Provide the training on the warning sound while there is an emergency case
8	Reference legislation and environmental standard	▪ Law on Environmental Protection 2012 ▪ Law on construction 2009 ▪ Law on Hygiene, Disease Prevention and Health Promotion (Amendment), No. 08/NA, 2012 ▪ The National Environmental Standard No.81/GO,2012
9	Responsible Divisions	▪ The construction contractor shall be responsible for the management-protection measures in term of emergency response ▪ The supervisor of construction contractor shall certify the emergency response plan ▪ The construction contractor shall establish the internal environmental management unit which is responsible for reporting to the state sector
10	Budget	The budget for the management and monitoring for the state sector shall be responsible by the project developer as described in this ESIA. The budget for the project consultants is upon the agreement between the project and consultants.

4.5 Management and Monitoring Plan for the operation phase

4.5.1 Activities in the operation phase

The significant activities which are the fundamental for the dry port in the operation phase consists of the procedures below. These activities are: the continual entry-exit of transport trucks.

(1) The container transport (railway or truck) refers to the discharge of imported container and the container loading from the port to the truck
(2) The container movement between the port and the container yard refers to the container transport by truck from the port to store at the container yard and the container transport from the container yard to the truck.

(3) The container storage is the storage of import container to wait to deliver to the container owner trucks including the importer (full container), exporter (empty container) and the exported container storage to the trucks.
(4) Handover of container refers to the handover the container to the container owner trucks including the importer and exporter to store in the container yard.
(5) Customs clearance process in the project area.
(6) Storage and transport of cargo;
(7) Maintenance of the containers;
(8) Other logistics service provisions.

4.5.2 Sub-plans for the management and monitoring during the operation phase

In accordance with the activities in the operation phase and the results of the environmental and social impact assessment, the Sub-plan for the environmental and social management and monitoring in the operation phase was determined as follows:

1	SP1	Water quality Management
2	SP2	Air pollution and quality Management
3	SP3	Noise and vibration Management
4	SP6	Entry-Exit Traffic in the Project Area Management
5	SP7	Health and safety management

(1) Sub-plan SP1: Water quality control

SP1: Water quality Management		
No	**Purpose**	**Implementation Description**
1	Project period	Operation phase
2	Area with the using water and pollution control	▪ Project component areas ▪ Office, accommodation and food court areas ▪ Maintenance and repairing area
3	Issues related to the environment and society	Water quality, health and safety
4	Physical and biological environment, and social economy Impact	▪ Changing of surface water and ground water quality when there is the wastewater discharge without the standard treatment ▪ The impact on terrestrial and aquatic ecology
5	Consequences impact by the construction activity.	▪ The traffic of transport trucks will cause the leakage of engine oil and the risk of washing in to the natural water source and ground water ▪ The leakage of engine oil from the maintenance area
6	Environmental system impact	▪ The negative impact on the terrestrial and aquatic animals and human health in particular the project staff and workers and people living nearby the project area ▪ The contamination of soil and natural water source.
7	Impact characteristic	The impact from the water quality and water usage may occur in the short and long term, direct-indirect, minor-

SP1: Water quality Management		
No	**Purpose**	**Implementation Description**
		most impact and exceeding the National Environmental Standard.
8	Management/Protection of Mitigation Measures	▪ According to the study from JICA, rainfall drainage system and other domestic water from the project will be released to wastewater retention ponds in the CY area with the storage capacity of 90,000 m^3. Besides the wastewater from bathrooms, canteen, garage/wastewater from industry won't be drained into this pond which will drain separately into the septic tank system, where it won't be drain directly into the environment. ▪ Keep good maintenance of structures of each project components, such as frequently cleaning the drainage system surrounding the project area and each project component site, ensuring the quality of drainage system during the rainy season, and erosion or overflowing of ditch shall not occur which will cause the wastewater to flow into natural water sources. ▪ Maintenance of bathrooms or treatment pond for wastewater from residential building and machinery garage, each wastewater treatment pond must have the guaranteed wastewater treatment standard. ▪ Garage, container repair areas and others, which may cause oil spills must use proper tray to prevent leakage and store these oils for the proper disposal.
9	Monitoring and evaluation methodology	▪ Visual observation along the road, parking yard, maintenance area, the hazardous material storage including old engine oil, lubricant oil and hydraulic oil. ▪ Water quality monitoring shall be implemented once the operation commences to control the wastewater quality discharge into the natural water source ▪ Wastewater quality monitoring plan shall be implemented daily ▪ Collect the water samples for analysis particularly in the rainy season to minimize the risk for discharging into the outside water source
10	Implementation schedule	Throughout the operation phase
11	Monitoring frequency	Regarding the monitoring frequency, the project environmental management unit shall monitor on a monthly basis and report to the government sector. while the monitoring by the government sector will be as required or when there are issues

SP1: Water quality Management		
No	**Purpose**	**Implementation Description**
12	The training on the environment related to the water quality	▪ Training on the method for the water sample collection as well as the basic water quality analysis ▪ Regularly organize the training and raising awareness on the environment to the project staff and workers
13	Equipment	Use the equipment to analyze the wastewater quality
14	Reference legislation and environmental standard	▪ Law on water and water sources,2017 ▪ Law on Hygiene, Disease Prevention and Health Promotion, No.08/NA, 2012 ▪ The National Environmental Standard No.81/GO, 2017
15	Responsibility agency	▪ The project shall be responsible for the management of water quality issue and established the internal environmental management unit which is responsible for the internal monitoring to report to the relevant government sector.
16	Budget	The budget for the management and monitoring for the state sector shall be the responsibility of the project developer as described in this ESMMP. The budget for the project water quality analysis and consulting companies is upon the agreement between the project and consultants.

The determination on the sampling collection point and water quality index

sampling collection point	index	Frequency
Operation phase		
1. Pond serving the project drainage 2. The nearby risky water source	Temperature	Project EMU: once for every 1-3 months
	pH	
	Conductivity	
	Dissolved oxygen (DO)	
	Biological Oxygen Demand (BOD_5)	
	Total Suspended solids (TSS)	
	Total Dissolved Solids (TDS)	
	Oil and Grease	
	Fascial coliforms	
	Others required	

Note: the result of water quality index measured shall be compared with the water quality standard as stated in the National Environmental Standard, No.81/GO, 2017 and others related standards.

The water quality monitoring for the construction and operation phases will be sample collection and analysis in the laboratory. This analysis budget/ 1 sample (including analysis fee, equipment rental fee, sampling bottles and transport fee exclude the allowance for the technical officers) is 250 USD/sample. This budget will be the company's budget allocated for the water quality analysis.

(2) **Sub-plan SP2: Air pollution Management**

SP2: Air pollution Management		
No	**Purpose**	**Implementation Description**
1	Project Period	Operation Period
2	Areas to cause the air pollution	▪ Access road ▪ Parking yard ▪ Cross docking area
3	Issues related to the environment and social	The air quality and the health and safety of project staff and workers including people living nearby the project and passengers through in the project area
4	Physical and biological environment and social economy impact	The gas emission and other particles from the transport trucks through the project area can cause the negative impact on health and quality of life of workers working and living in the nearby project area.
5	Consequences impact by the construction and operation activities.	▪ The gas emission from the transport trucks through the project area including cargo transport truck, staff and customer vehicles. ▪ Burning of garbage and waste without the control and separation.
6	Consequences affect by the environment impact	The negative impact on the air quality and the staff and workers health including people living nearby and passengers through the project area.
7	Impact characteristic	The negative impact on air quality may occur in the short and long term, direct-indirect, less-more, and exceeding the National Environmental Standard
8	Management/control of mitigation measure	▪ Paving with concrete or asphalt along the road and container yard and other areas to reduce the dust from road ▪ Install the speed limit signs, signs to turn the engine off while the vehicles are waiting to transfer goods or visiting for work, and no revving the engine where it can be clearly and easily seen. ▪ Advise the security staffs to observe and control all drivers in the project to strictly follow the warning signs within the project area ▪ Provide cleaners to clean the parking lot and access roads in the project area daily to prevent dust scattering ▪ Specify sufficient tree planting and green areas allocation in the project area to help absorbing the CO_2 substance
9	Monitoring and evaluation methodology	▪ Visual observation ▪ Collection of air quality sampling in the project area

SP2: Air pollution Management		
No	**Purpose**	**Implementation Description**
10	Implementation schedule	Throughout the operation phase
11	Training	▪ Provide training on the traffic and lifting of heavy vehicles ▪ Raising awareness and advise to wear the protective clothing as appropriate (wearing mask, protective clothing, dust protection and other equipment) in area with high risk for air quality ▪ Raising awareness on waste management, not burning and throwing the garbage
12	Equipment	▪ Temperature measurement ▪ The environmental specialist on the air quality to review and provide the reasons ▪ Establish the Environmental Management Unit with qualified technical officers.
13	Reference legislation and environmental standard	▪ Law on Hygiene, Disease Prevention and Health Promotion (Amendment), No.82/NA, 2012 ▪ The National Environmental Standard, NO.81/GO
14	Responsibility Agency	▪ The project owner shall be responsible for the management measures on air quality
15	Budget	The management and monitoring budget for the relevant government agency shall be responsible by the project developer as described in this ESMMP. However, the budget for the consulting companies is upon the agreement between the project and consultant

Sampling collection point and air quality index

Sampling Collection Point	Index	Frequency
Operation Phase		
1. The project area with the risk	PM10 (24 hrs)	Project EMU: Annually
	TSP (24 hrs)	
	PM2.5	
	Lead (pb)	
	Carbon Monoxide (CO-8 hrs)	
	Sulfur Dioxide (1 hrs, 24 hrs)	
	Nitrogen Dioxide (NO2), (1 hr, 24 hrs)	
	Ozone (O_3) 8hrs	

Sampling Collection Point	Index	Frequency
Operation Phase		
	Others required	

Note: The result of air equality index measurement shall be compared with the air quality standard as stated in the National Environmental Standard, No.81/GOV and related standards.

The air quality monitoring in the construction and operation phases will be the sample collection and analysis in the laboratory. The budget for the analysis/1 sample (including analysis fee, rental equipment fee excluded the allowance for working onsite) is 1,200 USD/sample. (This budget is the company's budget allocated for the air quality monitoring)

(3) **Sub-plan SP3: Noise and Vibration Management**

SP3: Noise and Vibration Management		
No	**Purpose**	**Implementation Description**
1	Project period	Operation Phase
2	areas with the noise and vibration issues	▪ Access road in the project area ▪ Cross docking yard
3	Issues related to the environment and society	Noise and vibration issues, the health and safety of the project staff and workers including people living nearby the project area
4	Consequences impact by the construction activity	Regarding the transport and transfer ofcargo containers (especially, the empty ones). if not done carefully, it may cause objects to fall and create loud noise disturbance. Moreover, the passing in-out of the project of transportation trucks including materials, staff, workers and general visitors can also cause loud noise, to disturb staff, workers and residents in the project vicinity.
5	Consequences affect by the environmental impact	The disturbance and impact on health of workers working in the operation phase. The noise and vibration affect the nearby community
6	Impact characteristic	The negative impact of noise and vibration may occur in the short and long term, direct-indirect, minor-most, and exceeded the National Environmental Standard.
7	Management/control of mitigation measures	▪ The lifting controllers/lifters must be skilled and have specific experiences in lifting, cargo transfer shall be done carefully to prevent any falling objects, any crashing that cause loud noise and to prevent any damage that may happen to the materials inside the container. ▪ Limit the speed of vehicles in the project area not to exceed 20km/hour to reduce the noise ▪ Install signs/symbols not to use horns and loud noise in the visible area. ▪ Measure the noise level frequently during the operation phase or assign staff responsible for the public relation

SP3: Noise and Vibration Management		
No	**Purpose**	**Implementation Description**
		works and communicating with residents living nearby the construction area, if any grievance about loud noise occurs it shall be dealt with immediately ▪ Provide the noise protective equipment to the staff and workers working
8	Monitoring and evaluation methodology	Using the standard noise and vibration measurement equipment. However, the measurement point shall be determined the areas with heavy works and sensitivity in the surrounded area.
9	Implementation period	Operation phase
10	Training	▪ Provide the training on the traffic and lifting of heavy vehicles ▪ Awareness raising and advise to use the protective equipment as appropriate (Ear plug, face mask, protective clothing and other equipment) in the area with high risk ▪ Provide the training on the measurement of noise and vibration
11	Equipment	▪ The equipment for the noise and vibration monitoring (portable equipment) ▪ The environmental specialist on noise and vibration shall review and provide the reasons ▪ Establish the Environmental Management Unit with the technical officers
12	Reference legislation and environmental standard	The National Environmental Standard, NO.81/GO, 2017 ▪ Law on Hygiene, Disease Prevention and Health Promotion (Amendment), No.82/NA, 2012
13	Responsible division	▪ The project owner shall be responsible for the management measure on noise issue
14	Budget	The management and monitoring budget for the relevant government agency shall be the responsibility of the project developer as described in this ESMMP. However, the budget for the consulting companies is upon the agreement between the project and consultant.

(4) **Sub-plan SP6: Entry-Exit Traffic Management in the project area**

SP6: Entry-Exit Traffic Management in the project area		
No	**Purpose**	**Implementation Description**
1	Project period	Operation phase
2	Management area	Access road to the project including the public road used for the project transport

SP6: Entry-Exit Traffic Management in the project area		
No	**Purpose**	**Implementation Description**
3	Issues related to the environment and social	The main activity for this operation phase is the cargo transport through the project area. However, this may cause the impact on the transport and traffic along the public road and other roads using for the transport and traffic of the dry port. The increase of vehicles particularly the customer vehicles will affect to the traffic
4	Consequences impact by the transport/traffic activity	▪ The transport of heavy construction material without the traffic controller, the speed limit exceeded and disregard of the traffic rule. ▪ The emission of air pollution caused by the transport of construction material. If the vehicles are not maintained and no water spraying along the unpaved road particularly the dry season. ▪ The transport will affect the traffic of local people such as: its traffic will be delay due to the transport of truck entering and exiting the project area
5	Management/control measures	▪ Project name sign and direction sign for entry-exit in front each construction site. ▪ Install warning sign for construction area and trucks' passing in-out through the junction between Thadeau road, Dongphosy village to Xiengda road before reaching the construction site for 200 m in order to warn all road users to be more careful on the road when passing the construction points ▪ If possible, provide a sign or sticker, with project name, contractor, including coordinator's contact number that can be contacted for information and complaint, the sign should be of suitable size that can be clearly seen from the side of the construction transportation trucks ▪ Specify transportation and trucks passing in-out the project to only operate out of rush hours in accordance to traffic rules, if it is necessary to work, there must be workers facilitating the traffic ▪ Parking of any vehicle at project vicinity during the rush hours, if it can't be avoided, must be accompanied by signaling for road users with symbols or signs.

SP6: Entry-Exit Traffic Management in the project area		
No	**Purpose**	**Implementation Description**
		▪ Assign the project coordinator for grievance complaint, in case of any annoying grievance from project transportation. ▪ Set out the regulations and rules for the transportation truck drivers, to strictly follow traffic rules accordingly, especially trucks weight and speed limit shall not exceed 30 km/hour
6	Monitoring and evaluation methodology	The project and government environmental management unit shall regularly monitor once there is heavy transport. The monitoring shall comply with the management plan and mitigation measures as described above as well as the relevant regulations and laws. In case an accident occurs, it shall be resolved and lessons learnt from it to avoid it in the future.
7	Implementation schedule	Shall pay attention on the management and monitoring for the transport and traffic in the project area
8	Monitoring frequency	The Environmental Management Unit shall monitor monthly but the state environmental division shall monitor at least on quarterly basis (as described in this ESMMP)
9	Training	The Project Environmental Management Unit shall provide training to strictly implement the traffic regulations to the staff and workers who are responsible for the traffic-transport. In addition, there shall be awareness raising on the potential environmental impact caused by the traffic.
10	Reference legislation and environmental standard	▪ Law on Transport ▪ Law on Road Traffic ▪ The National Environmental Standard, No.81/GO, 2017
11	Responsible division	▪ The project shall be responsible for management/control of the traffic and transport
12	Budget	The management and monitoring budget for the relevant government agency shall the responsibility of the project developer as described in this ESMMP. However, the budget for the consulting companies is upon the agreement between the project and consultant.

(5) **Sub-plan SP7: Health and Safety Management**

SP7: Health and Safety Management		
No	**Purpose**	**Implementation Description**
1	Project Period	Operation Phase
2	Management area	▪ Cross docking yard ▪ Project access road and camp ▪ Other related areas

SP7: Health and Safety Management		
No	**Purpose**	**Implementation Description**
3	Issues related to the environment and society	▪ Health and safety of the project staff and workers ▪ Health and safety of people living nearby or passing through the project area
4	Consequences impact by the construction and operation activities	The project activities may cause the health impact of the project staff, workers and people living nearby the project area including: the dust from the access road, the pollution from the gas emission of transport trucks through the project area, the disturbance noise from the transshipment activity and accident from the movement, cargo cross docking and traffic of public cars
5	Control/management of mitigation measures	▪ Provide the personal protective equipment to the construction workers based on their work tasks including reflective clothing, protective helmet, shoes and gloves as well as the first aid kit at each construction site. ▪ Maintenance-repair of equipment to keep it in good condition to avoid accidents from the equipment and to reduce the pollution emission from the engine burning oil affected to the health ▪ Raising awareness on the machinery using guide and the construction equipment to the construction workers ▪ Install the warning sign, reflective rope or blockage at the construction site ▪ In case the construction activities operate at the nighttime, sufficient lights shall be installed for the operation ▪ Control the speed of the project vehicles to be within the speed limit and supervise the drivers to strictly follow the traffic regulations. In addition, there shall be control of vehicle weight and regularly maintain the transport trucks to be in good conditions. However, the transport traffic shall operate as appropriate, not in the peak hours to reduce the accident ▪ Accidents shall be recorded with description of the cause, resolution and the loss occur.
6	Monitoring and evaluation methodology	▪ The relevant division responsible for the monitoring and evaluation shall review the mitigation measures related to the health and safety of the social and natural environment. This is to ensure that the project or construction contractor has implemented the mitigation measures or not.

SP7: Health and Safety Management		
No	**Purpose**	**Implementation Description**
		▪ Observe the access road to the project area to ensure that traffic sign or lights were installed sufficiently or not. ▪ The warning signage shall be installed at the construction site in order to indicate the danger of risky working in order to ensure that the workers are fully aware on the risks. ▪ The sufficient drinking water and general water as well as others hygiene facility as required shall be provided at the accommodation area. ▪ The inspector shall be expertise on the environment, health and safety who is eligible to monitor and assist the project and construction contractor for their improvement.
7	Implementation schedule	The Environmental Management Unit shall conduct the monthly monitoring and the state environmental division shall monitor at least once every three months.
8	Training	▪ Provide the information on the health and safety to workers and people living nearby the project area ▪ Raise awareness on the health and safety related to the construction ▪ Provide the training to the staff and workers responsible for the project construction and advise them to wear the protective clothing while working ▪ Provide the training on the monitoring and data collection on health and safety to the environmental staff
9	Reference legislation and environmental standard	▪ Law on Hygiene, Disease Prevention and Health Promotion (Amendment), No.08/NA, 2012 ▪ Law on Labor (Amendment), No.021/NA, dated on 24 Dec 2013
10	Responsibility Agency	▪ The project shall be responsible for the management/protection measures on the health and safety issues affect to the project staff, worker and nearby community.
11	Budget	The management and monitoring budget for the relevant government agency shall be responsible by the project developer as describe in this ESMMP. While the budget for the consulting companies is upon the agreement between the project and consultant.

4.6 Impact identification and overall measures for the implementation of the management plan

For ease of review and implementation of the social and environmental management plan, it will be divided into two phases: construction phase and operation phase, as shown in the table below:

Table 6 Environmental impacted and overall measures for the management plan implementation (Construction Phase)

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Physical Environment						
Topography	Site clearance activity, transport, improper soil stockpile organized may affect project landscapes within the project area.	• Build the temporary fence surrounding area or construction sites • Tools and construction materials must be kept well organized on site to mitigate the impact on project landscapes. • Keep the construction sites clean and tidy.	Low (-0.5)	Law on Construction 2009	Project owner and Contractor	Project and Government's EMU
Soil and Erosion	Site clearance activity, earth work, ground leveling for construction of project infrastructure and facilities will cause erosion easily especially when there is heavy rain.	• Set out the work plan for clearance work and ground leveling work to be done during dry season. • If there is earthwork excavation over a wide area and changes in ground slopes the slope of the excavation opening should be appropriate to prevent erosion. Excavated spoils should be stockpiled away from the excavation edge or heavy vehicles should avoid parking near excavation edges to avoid erosion and land slides	Low (-0.5)	Law on Construction 2009	Project owner and Contractor	Project and Government's EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		• Land filling must be properly compacted and to guarantee against erosion,				
Problem of soil spilling	Soil transportation by truck, which may result in some soil falling on the roads and impact the environmental	• Strictly implement the air quality mitigation measures such as: covering of soil during transportation, limiting the speed and cleaning of vehicle wheels • All trucks must have truck bed cover, in case the case where soil falls on the road or anywhere else, the contractor must clean or hire related government sectors to clean the access road immediately to reduce dust issues and difficult traffic.	Low (-0.5)	Law on Construction 2009	Project owner and Contractor	Project and Government's EMU
Water resources and quality	Water turbidity caused by sedimentation due to the ground leveling, oil strains and chemical contaminants from the construction machines and equipment, cement stains from concrete mixer and cement transportation to each construction site. Sewage issues occurred from residential areas and any use from lots of project staff and construction workers which can be hard to control	• Sedimentation and turbidity control: the project must avoid and suspend any work related to soil excavation-dredges during rainy periods to reduce mud and sewage drains into the water sources. • Oil stain and chemical contaminant control: construction equipment or tools cleaning must be done within the specific area with low risk to contaminate soil or water sources, the project should provide contract including fine condition for construction contractor, to be an obligation to the contractor to wash all type of machinery trucks and all construction equipment including the	Low (-1)	National Environment Standard(No. 81/PMO, 2017) Law on Water and Water Resources, 2017	Project owner and Contractor	Project and Government's EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		release of untreated wastewater from construction machine garage. • The project Concrete Batching Plant and garage shall be located far away from natural stream. • Provide adequate, clean sanitary toilets for workers. Once construction completed all toilet shall be dismantled.				
Climate and Air quality	Dust particles from the soil excavation and transportation of materials, the burning of fuel from vehicle use and heavy machines in construction activities will create CO, HC, NO_x	• Spray, sprinkle the ground surface where there has been excavations and where the soil, gravel, sand accumulate daily for at least 2 times/day • The materials transport into the construction area must have the proper bed truck cover to prevent any materials falling on the ground that may cause. • Maintain and repair machines and construction equipment frequently in the best conditions, to reduce the release of pollution from engines • Provide awareness raising and set out rules that workers are prohibited to burn solid waste in the construction site • Speed should be limited for the transportation vehicles, especially in the community area to 30 km/hour.	moderate (-2)	Law on Water and Water Resources, 2017 Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA 2012. Law on Construction 2009	Project owner and Contractor	Project and Government's EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		• The transportation vehicles' wheels must be washed when passing in-out of the project construction site. • Staff responsible for public relation work should be assigned who should frequently communicate with the community living close to the construction area if there are any grievances raised regarding dust issues				
Noise	Activities that require using heavy machines include, drilling, ground leveling, soil excavation or in case of foundation piling, foundation constructing, the construction of infrastructures of each component, decoration works, equipment transportation in-out construction sites.	• Build temporary fences higher than 2.5 m surround each project construction site • Select construction tools and equipment that make less noise • Construction tools and equipment that are only use occasionally shall be turned off while not in use, to reduce loud noise; • Maintain and repair machines and construction equipment frequently to be in its best condition and reduce loud noise. • Set construction schedule for noisy works such as: avoid the night time work from 19:00PM – 6:00AM, if it is necessary to work during the night time, avoid activities that create loud noise and notify the village authorities or residents nearby beforehand.	Moderate (-1.6)	Law on Water and Water Resources, 2017 Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA 2012.	Project owner and Contractor	Project and Government's EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		• Speed limit for transportation trucks shall not exceed 30km/hour for community area. • Provide hearing protection gears to staffs/workers who work with machines and those exposed to loud noise.				
Solid Waste	Construction waste and solid waste from daily use by workers	• Waste from construction activities that can be reused should be separated and reuse or sold to related sectors to reduce the amount of waste for disposal, for those that can't be reused should be stored properly and dispose of when there is proper volume; • Provide sufficient number of bins for workers' camps and separate the waste. • Control waste burning or littering • The construction contractor shall be coordinated and made a contract with related sectors such as: Vientiane City Office for Management and Service, waste collection company who are responsible for daily waste disposal.	Moderate (-2)	National Environment Standard No. 81/PMO 2017 Law on Hygiene, Disease Prevention and Health Promotion (Addendum) No. 08/NA 2012.	Project owner and Contractor	Project and Government's EMU
Biological Environment						
Terrestrial Ecology and Wildlife	The proposed project is located in the city area, most of land use in the project vicinity is residential land, office buildings, undeveloped land, etc. only the area of 19.90 ha that still the green area (shrub land), no endangered or	-	No Impact			

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	endangered plants were found and no big tree that has a diameter more than 10cm and no rare/endangered wild animals					
Aquatic Fauna and Aquatic Biota	There are two canals nearby the project area. The water in canals has high turbidity and, abandoned grassland and looks like wastewater. therefore has no significant aquatic ecology. The project construction and operation are expected to have no impact on aquatic fauna and neither the aquatic ecology.	-	No Impact			
Socio-economic						
Land Use	Existing private land use is including of construction land and paddy fields with a total area of 51.10 ha will change to permanent land of Thanaleng Dry Port & Logistic Park, Vientiane Project which will affect the livelihood of the residents.	• The project owner must compensate all loss of paddy field and construction land with the acquisition at the rate or unit price that is acceptable to both parties. • The land acquisition shall be delayed until the crop harvesting has been done. In case the land acquisition can't be delayed, all crops shall be compensated in accordance with the anticipated amount harvested and same as the market price • Limit the infrastructure and facility construction within the transferred area	Low (-0.5)	Decree on Compensation and Resettlement People from Development Project No.84/PMO	Project Owner	Project and Government's EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		• Construct the green area as fast as possible when the preparation of the construction has completed				
Population and community changes	During the pre-construction, the number of population within the project area will not change, as the activities during this period will only be land clearance and ground leveling which will not need lots of workers. Otherwise, there will not be any village resettlement, thus the population structures won't have much change. During the construction phase will require many workers for construction work. However, this project is located in the city area, it is expected that most of the workers are from Vientiane Capital that could come to work during day time and go back home every day.	• Project owner shall coordinate with the labor sector to issue the recruitment of the project employee policy by giving first priority to the affected people. This policy shall be added in the construction contract. • Employ local labor or people who are living in the potentially affected villages as much as possible. • If it is possible, avoid any resettlement to other villages	0	Decree on Environmental Impact Assessment No. 21/PMO and Law on Labor No. 43/NA, 2013	Project owner and Contractor	Project and Government's EMU

Land Acquisition	A total of 68 households (Land owners) from 12 villages in Vientiane Capital will be affected bythe project land acquisition which will have severe impacts on local livelihood particularly people who are mainly based on agriculture production because it will affect food security for their living.	• Prepare the detailed compensation plan, noting person/family, affected people from vegetation loss after land acquisition. • Compensation for opportunity loss shall be considered and paid to affected people according to the consultation outcomes between the resettlement management unit and affected persons in collaboration with local authorities, to set out the final compensation unit price, which shall be approved by the city governor through a proposal from the resettlement and livelihood restoration committee. • A suitable compensation package to be established working closely together with all stakeholder • The project owner must compensate for the loss of land before the project acquisition has taken place or make use of the land and must compensate with the rate that both parties agreed upon. • The land acquisition shall be delayed until the crop harvesting has been done. in case the land acquisition can't be delayed, all crops shall be compensated in accordance to the anticipated amount harvested and same as the market price; • Establish the grievance mechanisms for all affected people • Organize job development activities, in accordance with the need of	Low (-0.5)	Decree No. 21/PMO, Decree No 84/PMO, Law on Land No. 04/NA, 2003	Project Owner and relevant Government Agency	Project's EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
		residents and environmental conditions.				

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Structures and Assets.	The land acquisition of the Thanaleng Dry Port and Logistics Park, Vientiane Project will require the resettlement of 10 households, 28 huts, 29 fish ponds. Besides the structures, there are also some impacts on 393 industrial trees, 596 fruit trees, 325 bamboo trees will be impacted. Residents lost their construction land including the houses due to the project development land acquisition which has a severe impact on affected people who lose their housing.	• Prepare a detailed compensation plan, thus, prescribe persons/households whose are required to relocate and lose their assets, crops and trees. • Must establish a suitable compensation package working closely together with all stakeholders. • Establish grievance mechanisms for all affected people. • Organize job development activities, in accordance to the need/skill of residents and environmental conditions	Low (-0.5)	Decree No. 84/PMO on Compensation and Resettlement People from Development Project	Project Owner	Project's EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Conflict between residents and workers	Conflict between residents and asset survey staffs could be occurred, in case the survey has been implemented without any notification for residents before and may result an incomplete asset survey; The number of construction workers may be a lot, when compared to the total population of 8,758 people in 4 affected villages. The disturbance level is considered to be high. The large influx of workers during the construction phase may be the cause of conflict, because of the differences in behavior, attitude, belief and livelihood of migrants and residents which will lead on to argument and conflicts among workers or between workers and local communities. The conflicts between residents and workers may occur because of the difference in cultures and behaviors	• First Priority hiring local workers in four villages and households who lost their land for project land acquisition. • Project staff must learn about the local cultures, traditions and customs. • Site rules must be disclosed to workers to observe strictly when working with locals, including any movement outside worker camp after schedule. • Employment process must be fair and transparent, and the labor rate must commensurate with experience and qualifications • The project owner should have a good relationship with the local and promote as well as participate in community events including traditional festivals and cultural ceremonies. • Project owners must disclose project information and all related activities implementation including monitoring results to stakeholders and affected communities	Low (-0.5)	Decree on Environmental Impact Assessment No.21/PMO and Law on Labour (Revised Version) No. 43/NA, 2013	Project Owner and contractor	

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Impacts from construction activities to residents	Residents residing near the project development area may be impacted by construction activities such as: dust scattering, noise, untreated wastewater from construction activities and worker camps, and transportation accidents. However, these impact will occur over a short period and in specific place.	• It was defined in the mitigation measures for soil and soil erosion, water resources and water quality, air conditions and air quality, noise and vibration and solid waste above.	Moderate (-1.5)		Project Owner and Contractor	Project's EMU and Government' EMU
Ethnic and Religions	Most of people in 4 villages are Lao Loum and Buddhist. However, the development of the project be mainly on government owned land, where there is no high population density and no significant archaeological site, temple or historical place. The project development activities consist of infrastructure facilities for dry port and logistics. The project developer is also Lao Loum, like the residents within the area. Therefore, there won't be any impact on ethnicity and beliefs of residents. However, in the project implementation, there should be respect for their traditions and beliefs.	• Set the rules with regulation on respect of local traditions and cultures. • Disclosure among workers/project staff to perceive local cultures, traditions and customs as well as restrictions. • Promote religion by contributing in traditional festivals and religious ceremonies.	No Impact		Project Owner	Project's EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Education	The project implementation will not affect education of students in this area, as these developing areas do not include any educational institution and are located far from the communities. The construction activities are only constructing buildings and parking lots which are only located in the project area. The Project does not require large household resettlement. However, there will be a small number resettlement for some households which is based on the voluntary choices of the affected people. If resettled far from the previous village, it may have an impact on their children as they may have to move to the new school.	• Support education, as such: sport and educational equipment for public schools in 4 affected villages. • The household resettlement must consider about semester breaks. Even though the compensation has been done but the resettlement will have to delay until the semester ends or until their children get accepted into the new school	No Impact			Project's EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
Gender	The development project areas are located far from community areas which are the development of infrastructures and facilities for dry port and cargo transfer only. It won't affect the village organization chart, social structures, livelihood and gender in the community as well the families.	Prepare the Gender Action Plan that will include: • Women shall have a chance to participate in every step of the project development, from the planning, designing until the project operation phase, thus, looking for their comments and adjust in the improvement. • Prioritize women to work in the project, at least the number of women should be 30% of men in the project; • Design and construct sufficient and suitable toilets or sanitary rooms for women separately from men's. • Camps shall be separated for men and women	Low (-0.5)			Project's EMU and Government' EMU

Health Impact	Infectious diseases are a transmitting disease where it can transmit from one person to another directly through touching or indirectly through blood vessels. The determination of construction locations, waste disposal operation, and the influx of outside workers that may bring infectious diseases to local communities.	The moderate impact could be minimized with the implementation of the mitigation measures as below: • **Health check**: carry out the health check before the employment and shall include annual health check for all workers. Prescribe health parameters including blood check, x-ray, and medical allergy test. Testing for HAV IgG and against HAV IgM. • **Waste management** (food waste, wastewater and others): household waste will be collected and separated from construction waste and disposal by the contractor. Sewage from worker camps shall be treated and reuse in construction activities • Collaborate with the local health office about healthcare education and behavior change such as: raising awareness for 3 Sa-Ath and about tuberculosis • Organize the training on raising awareness about health for staff related to foodborne disease, sexually transmitted diseases and common cold. • Continue in monitoring the local health conditions about other diseases (such as: malaria, dengue fever, diarrhea in children, gastritis and others) as this information will be the tools for community health monitoring.	Low (-0.5)	Decree on Occupational Health and Safety No.22/PMO		Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Dust Most of construction activities particularly soil excavation and construction material transportation will generate the dust. The effect from the increasing level of dust has been assessed as not important as it will only have negative impacts and not trend to cause any injury or illness.	• spraying in construction sites or area with activities that scatters materials at least two times/per day during the dry season or during the wet season such as: road, settlement area, and others. • Only required project area that should be allowed to implement the construction activities at each stage and shall be implemented quickly • Assign labor to clean the project front road after each transportation truck passed and wash its wheels before leaving the project area. • Vehicles containing construction materials shall be covered and/or tied up to prevent any objects falling on the public road and minimize scattering. • Inspection, maintenance, or checking the tools/machines used for construction shall be carried out regularly to minimize released pollution. • Speed limit shall not exceed 40 km/hour, must prescribe for all vehicles within the construction area. • Monitoring of dust level at households located nearby unpaved road as this area contains the highest risk. • Increase frequency in spraying water on roads, emphasis on those households locate near the roads, especially the unpaved.	Low (-0.5)			Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Heat Heat stress can create high risk to workers globally during this climate change era. Construction workers are at risk of stress as most of them have to work outdoors under the heat, in the highest temperature with long working hours, but may have limitations or not being able to find shade or drink water.	• Implement the healthcare promotion among workers about the prevention of disease related to heat. • Install the high temperature warning sign in the construction area. • Allow break, indoors, protection clothing and drinkable water for construction workers, and when the temperature is higher than 35 degree, monitor all symbols, signs, they have to be enforced by the assigned person or headman. • Workers must be able to take a rest for ten minutes every two hours when the temperature is stable or higher than 35 degree	Low (-0.5)	Decree on Occupational Health and Safety No.22/PMO, February 2019. Law on Hygiene, Disease Prevention and Health Promotion No. 08/NA, 2011		Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Accidents and Injuries Accidents and injuries may occur by construction activities, material transportation, noise, electrical items, working hard, improper material storage. An emergency case such as fire, and explosion.	• Ensuring that all machines and vehicles are undergo proper maintenance and service as planned, as instructed by the manufacturers. • Ensuring the provision of personal protection equipment to workers. • Provide security training and raising awareness daily and frequently • Ensuring the provision of personal protection equipment to laborers according to the security plan. • All expected workers undergo a health check before employment. • Health check for each period (Health Watch program) for workers. • Transfer system during operation phase between the project and external health organization to ensure an inspection and treatment of any sickness and injuries of staffs in time. • The Clinic or first aid kids shall be available at the workplace. • The basic clinic or first aid kids shall be available at the workplace. • Training in awareness raising on health for workers about hygiene and sanitation, the operation in caring, infectious diseases, and the sensitive for cultures and local community custom.	Law (-0.5)			Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Traffic and Transportation Transportation vehicles of the project will use the 450 years Road, Thadeau Road and streets Construction vehicles are one of the high-risk components for road accidents and causing the traffic jams. Riders, road users and communities located near transportation roads, will have high risk for the effects from road accidents, which will impact as injuries and in the worst case, lead to death. Accidents also increase the risk for explosions and/or oil spills, traffic jams and obstructions as there are more vehicles on the roads, which can cause mental stress and confusion for road users.	• The normal assessment of the road conditions and the capacity to support the trucks and heavy vehicles. • Emphasize safe driving on access roads during the wet season. • Improve the access road conditions, especially, during the wet season, when the road may be at risk of erosion • Announce the use and implementation of the speed limit (in accordance to traffic law on National road and community area, at 20 km/hour on open road). • Ensure that all drivers have been trained and follow the traffic laws. • Limit/avoid the heavy transportation through residential areas and through school during the rush hours 07.30 to 08.30 and 15.30 to 16.30. • Ensuring all construction vehicles are maintained and serviced as instructed by manufacturers. • Strictly implement and increase training project to reduce transportation crimes of the contractors	Low (-0.5)	Law on Land Transport, No. 24/NA, 2012 and Law on Land traffic No. 23/NA, 2012		Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Employment and Household Income • During the construction phase, lots of construction workers will be required, this will be a good chance for affected people from the project to have more employment opportunities with the project. • Opportunity for small business, nearby and within construction areas such as: market, restaurant, grocery, pub, which will support the needs of the workers in the construction area and worker camps.	• Besides residents in Dongphosy village, the priority of employment must be affected people from land acquisition who live in those 12 villages. • Employment process shall be fair and transparent and the salary rate should be commensurate with experiences and educational qualification. • Employment contract conditions shall be comply with Labor Law 2013, Social Security law and salary standards as well as related laws and regulations. • Provide skills training for unskilled local people who will be employed for project construction. • In case the project must employ external people, the number of local workers must not be less than 50%. In this case, worker camps shall have sufficient facilities.	High (3.5+)	Decree on Compensation and Resettlement People from Development Project No. 84/PMO, 2016 and Law on Labour Nos. 43/NA, 2013		Project' EMU and Government' EMU

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Impact on Infrastructure Facilities The main impact on community basic infrastructures during the pre-construction and construction phases is the increasing number of material transportation vehicles on the roads, which may result in damaged/bad and dirty roads.	• Follow the weight limit set by the Department of Transportation for each type of transportation truck. • Set the speed limit to not exceed 40 km/hour • Build wheel washing point before leaving the project • Coordinate with local authorities to assist in monitoring weight and vehicle speed • Repairing the roads when they are in bad conditions.	Low (-0.5)	Law on Land Transport No.24/NA,2012 and Law on Land Traffic No.23/NA, 2012		Project' EMU and Government' EMU
	Water Source, Use and Supply	• No impact to local people on water use, Vientiane Water Supply Enterprise could be provided sufficient water supply for the Project and local people.	No Impact			
	Power Source, Use and Supply	• No Impact. Electricite Du Laos could provide sufficient electricity for the project	No Impact			
	Historical and Cultural Places	• No Impact, there are no historical and cultural place in the project development area.	No Impact			

Environment and Social	overall impact and cause-	Overall mitigation measure for implementation	Level of impact after mitigation measures	Legislation Reference	Responsible agency	Monitoring Unit
	Landscapes Construction activities may cause dust and unorganized materials, improper waste management which may affect the beautiful scenery	• The contractors shall prepare and organize the suitable material storage. • Construct sufficient and suitable waste storage as well as separate all waste in the defined waste types. • Spraying the construction area where there is dust spreading.	No Impact			Project' EMU and Government' EMU

Table 7 Environmental identification and overall measures for the management plan implementation (Project Operation Phase)

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
Physical Environment						
Topography	Changing in topography from existing abandoned land, agricultural land to be the main warehouse, general warehouse, container yard, parking lot and other project component might cause minor impacts on its topographic landscape	Determination of tree planting and green area allocation of the project to match with surrounded landscapes	No Impact			Project' EMU and Government' EMU
Soil and Erosion	During the project operation, there will not be any impact on soil and erosion	The project has allocated tree planting and green areas to cover the land surface to prevent erosion especially, the project's access road and parking lot, the container yard must be paved with asphalt or concrete.	No Impact			Project' EMU and Government' EMU
Water Resource and Water Quality	During the operation phase of this Dry Port project, there will be trucks transporting goods regularly, which may cause oil spill and risk in draining into natural water sources and groundwater	• According to the study from JICA, rainfall drainage system and other domestic water from the project will be released to wastewater retention ponds in the CY area with the storage capacity of 90,000 m^3. Besides the wastewater from bathrooms, canteen, garage/wastewater from industry won't be drained into this pond which will drain separately into the septic tank system, where it won't be drain directly into the environment • Keep good maintenance of structures of each project	Low (-1)	National Environmental Standard No. 81/PMO, 2017. Law on Water and Water Resource , 2017	Project Owner	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		components, such as frequently cleaning the drainage system surrounding the project area and each project component site, ensuring the quality of drainage system during the rainy season, and erosion or overflowing of ditch shall not occur which will cause the wastewater to flow into natural water sources. • Maintenance of bathrooms or treatment pond for wastewater from residential building and machinery garage, each wastewater treatment pond must have the guaranteed wastewater treatment standard. • Garage, container repair areas and others, which may cause oil spills must use proper tray to prevent leakage and store these oil for the proper disposal				
Climate and Air Quality	The amount of traffic in-out of the project, which are transportation trucks, staffs', customers' and regular visitors' vehicles, especially transportation trucks that regularly pass through the project may cause impacts on climate conditions and air quality from vehicle pollution.	• Access roads should be paved with asphalt or concrete and also the container yard and other areas to reduce dust from access roads. • Install the speed limit signs, signs to turn the engine off while the vehicles are waiting to transfer goods or visiting for work, and no revving the engine where it can be clearly and easily seen	Low (-1.3)	National Environmental Standard No. 81/PMO, 2017. Law on Construction, 2009	Project Owner	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		• Advise the security staffs to observe and control all drivers in the project to strictly follow the warning signs within the project area. • Provide cleaners to clean the parking lot and access roads in the project area daily to prevent dust scattering • Specify sufficient tree planting and green areas allocation in the project area to help absorbing the CO_2				
Noise and Vibration	Transporting and transferring cargo containers (especially, the empty ones). if not done carefully, it may cause objects to fall and create loud noise disturbance. Moreover, the passing in-out of the project of transportation trucks including materials, staff, workers and general visitors can also cause loud noise, to disturb staff, workers and residents in the project vicinity.	• The lifting controllers/lifters must be skilled and have specific experiences in lifting, cargo transfer shall be done carefully to prevent any falling objects, any crashing that cause loud noise and to prevent any damage that may happen to the materials inside the containers. • Speed limit for transportation vehicles passing through the project area shall not exceed 20km/hour to prevent loud noise. • Install signs/symbols not to use horns and loud noise in the visible area.	Low (-1.3)	National Environmental Standard No. 81/PMO, 2017.	Project Owner	Project' EMU and Government' EMU
Solid Waste Management	Waste from the human daily use, it also comes from other activities in the project such as: waste from canteen, office, storage area, garage and cargo clearing and other areas.	• Continually provide sufficient number of bins in each project area and separate waste type • Continually control waste burning or littering and provide the awareness raising event for staffs to understand about the disadvantages	Low (-0.5)	National Environment Standard 81/PMO, 2017). Law on Hygiene, Disease	Project Owner	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		of waste and know the proper disposal method, any violation should be fined • Project shall maintain coordination and contract with related sectors such as: Vientiane City Office for Management and Service, waste collection company who responsible for waste disposal daily.		Prevention and Health Promotion (Revised Version) No. 08/NA, 2012		
Biological Environment						
Forest and Wildlife	The proposed project is located in the city area, most of land use in the project vicinity is residential land, office buildings, undeveloped land, etc. only the area of 19.90 ha that still the green area (shrub land), no endangered or endangered plants were found and no big tree that has a diameter more than 10cm and no Rare/endangered wild animals.	-	No Impact			
Aquatic Fauna and Aquatic Biota	There are two canals nearby the project area. The water in canals has high turbidity and, abandoned grassland and looks like wastewater. Therefore results in no significant aquatic ecology. The project construction and operation are expected to have no impact on aquatic fauna and neither the aquatic ecology.	-	No Impact			
Socio-Economic						
Land Use	Each land use of the residents has been transformed into project area since the pre-construction phase		No Impact	Decree on Compensatioan d Resettlement	Project Owner	Project' EMU and

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
	and completed all project infrastructure development during the construction phase. During the operation phase, there will not be any land transforming and impact on land issues.			People from Development Project N.84/PMO, 2016		Government' EMU
Access Road and Traffic	When the construction is completed until the operation phase, there will be an increasing number of vehicles as there will be lots of trucks and cargo transportation coming through the project area, thus according to the information from the JICA studies, currently there are approximately 200-250trucks/day transporting cargo through Thanaleng warehouse. Therefore, if the construction of this proposed project is completed and operating, it is more likely to have more cargo transporting trucks coming in, which will highly affect the traffic on the 450 years Road, Thadeau Road, the junction between Thadeau road at Dongphosy village to Xiengda village and small streets, especially during the rush hours.	• The Project arranges sufficient parking for trucks to avoid parking on the side roads, coordinate with related sectors for permission to install project name sign at a distance of 500 m before entering the project to signal all visitors in advance • Provide signage which show directions and clear traffic signal in front of the project to avoid any confusion for the visitor • Specify conditions and the release of cargo trucks during the rush hours • Install CCTV in the parking lots and the entrance area to control and resolve traffic issues within and outside the project entrance • Coordinate with related sector to paint the curb in white-red before and after the project entrance to prevent any vehicle parking there, which will block the traffic in front of the project.	Low (-0.5)	Law on Land Transport No.24/NA and Law on Land Traffic No. 23/NA, 2012	Project Owner and Logistics Company	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		• Install sufficient electricity and light around the project entrance in order to be able to see clearly • During the rush hours assign staff to facilitate the traffic signal in front of the project (entrance point) • Regular assessment of the road conditions and the capacity to handle the weight of trucks and heavy trucks. • Emphasis on traffic safety during the wet season. • Announce and implement the speed limit (in accordance to traffic law on National road and community area, 20 km/hour on open roads). • Ensure that all drivers have been trained and follow traffic laws. • Limit/avoid the heavy transportation which passes through residential areas and schools during the rush hours from 07.30 to 08.30 and 15.30 to 16.30. • Ensure that vehicles are well maintained and serviced per manufacturers' instructions. • Strictly implement and increase training project to reduce the transportation crime.				

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
Traffic during the Rush Hours	Traffic during rush hours along the 450 years Road, Thadeau Road, the junction between Thadeau Road at Dongphosy village to Xiengda village is a ring road for Vientiane municipality, which is an economic focal point, and includes the locations of many important places and it is a high density area. Because of this, these areas hold high density traffic, if there is additional trucks or heavy trucks to the traffic especially, during the rush hours, it may cause difficulty and traffic jams.	• Limiting access to the roads during the rush hours: all project's material transportation vehicles (soil dump trucks), should avoid working during the rush hours (07:00 – 09:00, 11:00 – 13:00 and 16:00-17:00 m) to avoid any issue on the increasing number of vehicles that may cause traffic jam. • Prescribe conditions and schedules of cargo trucks releasing out of the rush hours. • During the construction and operation phase in the rush hours, all project vehicles shall be organized properly or parked at the defined parking place to avoid blocking the traffic and destroy the scenery. • Parking any vehicle at project vicinity during the rush hours, if it can't be avoided, must be properly sign posted for road users, which could be with symbols or signs.	Low (-0.5)	Law on Land Transport No.24/NA and Law on Land Traffic No. 23/NA, 2012	Project Owner and Logistics Company	Project' EMU and Government' EMU
Socio-Economic Impact	• A key impact from the development of Thanaleng Dry Port project is the land transformation especially from residential area and paddy field, into the project facility and	• Project owners must collaborate with the Department of Labor to draft employment policies, by stating the affected people as first priority. • Prepare and implement a resettlement and compensation	High (2.5+)	Decree on Compensation and Resettlement People from Development Project No. 84/PMO, 2016	Project Owner	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
	infrastructure construction which will result in less agricultural production area. Some families may have to resettle in a new village/place. • Affected people are concerned about their livelihood especially rice as they won't have their paddy field or they have less area for rice growing. • Impacts on jobs for households who work in this area, that require them to resettle to new areas	plan in accordance with Decree 84/GOV. • Project owners in collaboration with related government sector, to provide skill training for residents who work for the project. • Consider the grievances or recommendations from affected people: grievance responses to reduce the impacts shall be implemented immediately				
Ethnic and Religions	Most of people in 4 villages are Lao and Buddhist. No activities that will affect to the ethnic and religions.	• Set the rules with regulation on respect of local traditions and cultures. • Disclosure among workers/project staff to perceive local cultures, traditions and customs as well as restrictions. • Promote the religion by contributing in traditional festivals and religious ceremonies	No Impact			
Education	No impact on education	• Support education, as such: sport and educational equipment for public schools in 4 affected villages.	No Impact			

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
Gender	The development project areas are located far from community areas which are the development of infrastructures and facilities for dry port and cargo transfer only. This won't affect the village organisation chart, social structures, livelihood and gender in the community as well the families. However, the project shall promote gender among the community	• Women shall have a chance to participate in every step of the project development, from the planning, designing until the project operation phase, thus, looking for their comments and adjust in the improvement. • Prioritize women to work in the project, at least the number of women should be 30% of men in the project; • Design and construct sufficient and suitable toilets or sanitary rooms for women separately from men's. • Camps shall be separated for men and women.	No Impact			
Health Impact	Infectious diseases are transmitting disease that can transmit from one person to another directly through touching or indirectly through blood vessels. The specification of residential areas, working areas, waste disposal operation, and the influx of outside workers may bring infectious diseases to local communities. Infectious diseases relate to construction activities include:	• Waste management (food waste, waste water and others): household waste should be collected and separated from construction waste and disposal by the contractor. Waste water from worker camp shall be treated and re-use in the construction activities. • Collaborate with the local health office to provide healthcare education and behaviour changing such as: raising awareness for 3 Sa-Ath and about tuberculosis.	Low (-0.5)	Decree on Occupational Heath and Safety No. 22/PMO, February 2019. Law on HIV/AIDS Control and Prevention No.01/NA, June 2010. Law on Hygiene, Disease		

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
	• Viral diseases caused by a virus (malaria, dengue fever): standing water surrounds the drainage, temporary pond and standing water may trigger mosquito breeding. • Sexually transmitted diseases (HIV/Aids): The influx of outside labours may expand local communities. Number of workers during construction phase. • Airborne diseases (Tuberculosis, H1N1): contact closely with workers in the society and residents. Workers may be brought in disease or sensitive to the local outbreak.	• Organize training on raising awareness about health for staff related to foodborne disease, sexually transmitted diseases and Influenza • Continue in monitoring the local health conditions about other diseases (such as: malaria, dengue fever, diarrhea in children, gastritis and others) as these information will be the tools for community health monitoring.		Prevention and Health Promotion No. 08/NA, 2011		
	Dust Dust occurring from cargo transportation on dust roads and roads in bad conditions during the project operation phase, the impact area from such will depend on climate conditions and atmosphere (such as: wind speed and direction, humid/dry) and transportation road conditions.	• Monitoring the air quality in and out the project area. If it exceeds the standards or tend to be higher, inspection and solution is needed. • Water spraying along the roads to prevent fugitive dust and impactinf on the community. • Controlling all trucks to have bed truck covers to prevent the falling objects, item scattering and accidents.	Low (-0.5)			

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
	Accident and injury	• Ensuring that all machines and vehicles are under proper maintenance and service as planned schedule, instructed by the manufacturers. • Ensuring the provision of personal protection equipment to workers. • Provide security training and raising awareness daily and frequently. • Ensuring the provision of personal protection equipment to workers according to the security plan. • All expected workers shall undergo a health check before employment. • Health check at each stage (Health Watch project) for workers. • Human resource training and equipment. • All transfer system during operation phase between the project and external health organization to ensure an inspection and treatment of any sickness and injuries of staffs in time. • Provide first aid room at the working place • The training of awareness raising on health for workers about hygiene and sanitation, the operation in caring, infectious diseases, and the	Low (-0.5)	Decree on Occupational Heath and Safety No. 22/PMO, February 2019. Law on Hygiene, Disease Prevention and Health Promotion No. 08/NA, 2011	Project Owner	Project' EMU and Government' EMU

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		sensitive for cultures and local community custom.				
	Traffic and Transportation Cargo Trucks will passing in-out of Thanaleng Dry Port area on the 450 years Road, Thadeau Road, small streets and other roads in Vientiane Capital.	• The normal assessment of the road conditions and the capacity in supporting the trucks and heavy vehicles. • Emphasize safe driving on access roads during the wet season. • Improve the access road conditions, especially, during the wet season, when the road may be at risk for erosion. • Announce the use and implementation of the speed limit (in accordance to traffic law on National road and community area, at 20 km/hour on open road). • Ensure that all drivers have been trained and follow the traffic laws. • Limit/avoid the heavy transportation through residential areas and through school during the rush hours 07.30 to 08.30 and 15.30 to 16.30. • Ensuring that vehicles have been maintained and serviced as instructed by the manufacturers. • Strictly implement and increase training project to reduce	Law (-0.5)	Law on Land Transport No.24/NA and Law on Land Traffic No. 23/NA, 2012	Project Owner	Project' EMU and Government' EMU.

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		transportation crimes of the contractor.				
Economic Impact	Employment and Household Income • Affected people are concerned about their livelihood especially rice as they won't have their paddy field or they have less area for rice growing. • Impacts on jobs for households who work in this area, that require them to resettle to new areas	• The project owner shall collaborate with the Labor section to prepare the employment policies, by stating the affected people as the first priority. • Prepare and implementation the resettlement and compensation plan in accordance with Decree 84/GO. • Project owners in collaboration with related governmental sector, provide skill training for residents who work for the project. • Consider the grievances or recommendations from affected people: grievance responses to reduce the impacts shall be implemented immediately.	High (2.5+)	Decree on Environmental Impact Assessment No. 21 and Law on Labour (Revised Version) No. 43/NA, 2013	Project Owner	Project EMU and Government' EMU
Infrastructure and facilities impact	The possible impact on community basic infrastructures may be caused by the increasing number of cargo transportation trucks on the access roads to the project area, which may be cause bad or damaged roads before the expected period	• Set up the vehicles' weighting points before leaving the dry port area to ensure that all trucks did not exceed the weight prescribed standard. • Collaboration with the relevant local authority on defining each type of cargo truck weight and punishment measures for violators or who carry exceeds the prescribed weight.	Low (-0.5)	Law and Land Transport No.24/NA, 2012 and Law on Land Traffic No.23/NA,2012	Project Owner	Project EMU and Government EMU.

Environmental and Social	Overall Impact and Reason Cause-effect	Overall Mitigation Measures for Implementation	Level of Impact after Mitigation Measures	Legislation Referent	Responsibility Agency	Monitoring Unit
		• Contribute fund on the national road maintenance to the responsible governmental organizations.				
Water Source, use and supply	Water use for the project operation activities bill be used water supply that supply by Nampapa Nakhoneluang.		No Impact			
Energy Source, use and supply	The project operation will be used the electricity that will be supplied by EDL.		No Impact			
Historical and Cultural Places	From the field survey results in the project area, the proposed area to develop the project, mainly are paddy field and government owned land, an abandoned land and did not find any historical and cultural place		No Impact			
Landscapes	The completed construction will increase the beauty of architecture as the project has been designed and constructed according to Lao style architecture and is also environmentally friendly		No Impact			

4.7 Environmental and Social Management and Monitoring Budget

All development projects have obligations to Environmental and Social Management for the potential impact by their own project, how much of an obligation depends on the consequences of the project impact. How much project potential impact depends on the type, size and location of the project, if those projects are located in the sensitive area on natural ecosystems, those project will have higher obligations. Therefore, the environmental and social obligation is a necessary measure of project developer or project owner to have responsibility for the budget for the management and mitigation measures to minimize direct and indirect potential impact, in both the short-term and long-term.

Thanaleng Dry Port & Logistics Park, Vientiane Project also has an obligation for environmental and social management, to contribute to the environmental and social protection and provide compensation for the impacst. The budget arrangement for the implementation of the environmental and social obligations of this project is based on the key legislation as follows:

- ✓ Law on Environmental Projection (Revised Version) 2012
- ✓ Decree on Environmental Impact Assessment (No.21/PMO,2019);
- ✓ Decree on Compensation and Resettlement People from Development Project (No. 84/PMO, 2019)'
- ✓ The decision on endorsement and announcements for using the Technical Guideline on Preparing the Environmental and Social Impact Assessment Report, No. 2796/MoNRE.DESIA.DMM, dated 19 December 201.

4.7.1 Environment Management and Monitoring Budget for Project Owner

In accordance with the results of the potential environment and social impact assessment, the project developer has estimated the budget for environmental and social management and monitoring as follows:

Environmental Management and Monitoring Budget for the Project Owner

No.	Description of the budget	lump sum budget (Construction Phase 3 years) (USD)	Responsibility
1	Air Quality Impact Management and Monitoring (Dust and exhaust emission)	10,000	Project owner/contractor is responsible for the budget and implementation by themselves
2	Noise and Vibration Management and Monitoring	5,000	Project owner/contractor is responsible for the budget and implementation by themselves

3	Soil Erosion and Water Quality Management and Monitoring	10,000	Project owner/contractor is responsible for the budget and implementation by themselves
4	Solid Waste and Hazardous Waste Disposal	8,000	Project owner/contractor is responsible for the budget and implementation by themselves
5	Worker Camp Management	5,000	Project owner/contractor is responsible for the budget and implementation by themselves
6	Occupational and Community Heath and Safety	5,000	Project owner/contractor is responsible for the budget and implementation by themselves
7	Equipment and Material Transportation for the Project.	5,000	Project owner/contractor is responsible for the budget and implementation by themselves
8	Training on Environment	5,000	Project owner/contractor is responsible for the budget and implementation by themselves
9	Budget for Emergency Incident	50,000	Project owner/contractor is responsible for the budget and implementation by themselves
Total		**USD 103,000**	

4.7.2 Monitoring and Capacity Building Budget for Government

Provision of the budget for environmental monitoring as mentioned is very important in order to monitor the specified obligations on potential impact to ensure compliance with the environmental management and mitigation plan as mentioned above, a necessary estimated budget for monitoring for the potential impact and size of the impact for relevant sectors throughout the construction and operation phase. The project has agreed to provide the monitoring budget for the whole project concession agreement of USD 88,672.50

Table 8: Management and Monitoring Budget for Government (USD)

Organization	Construction Phase 3 years	First 2 years of Operation Phase	Operation Phase 45 years	Total (USD)
National Level	2,194.50	1,113.00	17,955.00	21,262.50
Vientiane Capital	2,877.00	1,113.00	17,955.00	21,262.50
Hatsayfong District	2,924.25	1,144.50	18,663.75	22,732.50

Saysettha District	2,924.25	1,144.50	18,663.75	22,732.50
Total	**10,920.00**	**4,515.00**	**73,237.50**	**88,672.50**

**Remark: Budget Plan No. 1563/MoNRE.DMNE, Dated 04 November 2019*

Table 9 Summary of Environmental and Social Management and Monitoring Budget

No.	Environmental and Social obligation budget of the project	Total (USD)
1	Compensation Budget (the detail is in the compensation report)	
2	Management and Monitoring Budget for Project Owner	103,000.00
3	Management and Monitoring Budget for Government	88,672.50
Grand Total (USD)		**191,672.50**

4.8 Community Development Plan

4.8.1 Objective of the community development plan

A Community Development Plan has been developed to contribute to improving the livelihood quality of the villages which is located within the project vicinity in order to enhance their living standards as well as support on villages' socio-economic development by offering opportunities employment for villagers, contribution on development and improve the efficiency of the village administration work and improve the infrastructure. The objectives of community development plan is to:

- ✓ Contribution to support the local socio-economic development plan
- ✓ Contribution to community development and livelihood standard improvement both physical and mentally particularly the villagers who are living in the project vicinity area.

4.8.2 Implementation Scope of Plan

Community Development Plan has been prepared in order to implement and contribute to the socio-economic development of the villages which are located in the project area to ensure the communities have improved and better livelihood development, as well as basic contribution for village development.

4.8.3 Work Plan for Community Development Plan.

(1) Improvement Village Administration Plan.

Improvement Village Administration Plan	
Objective	• To develop basic material-equipment and condition which is necessary to enhance the effectiveness of the village administration; • To promote village administration for convenient, fast and higher efficiency service for residents • Villagers able to receive and acknowledge updated information of the village and local and national socio-economic development situation.
Activity will be implemented	• Provide tools and equipment for use for village administration work as necessary.

	• Contribute to a village office and facilities renovation in the village as appropriate; • Contribute to appropriate supports bases on the requirement and necessity of the village in each period such as the important days of the party and nation including provide support on material and money for national defense and security work.
Outcome expectation	• To enable the village authority to provide the convenient, fast, transparent service and justice for villagers; • To make the village administration work and social management orderly, peaceful and safe societyt. • Villagers turn to active contribution to village socio-economic development and receive the higher achievement

(2) Infrastructure Improvement and Social-Culture Development Plan

Infrastructure Improvement and Social-Culture Development Plan	
Objective	• Improve the access road to the project that are used by the community to be convenient and safe • To minimize accidents that may occur by the transportation service vehicles for the project activities; • To minimize dust that will be generated by the transportation • To support the development and building of infrastructures and facilities within the villages such as schools, improve streets in the villages, health, environment protection, sports, artic and ethnic culture conservation
Activity will be implemented	• Contribute to improving and maintaining roads the project will use with the community to be convenient and safe road. • Install warning signs at the site with potential accident risk • Water spraying and cleaning road during the dry season to minimize dust particles that will be generated by project transportation • Contribute to social-cultural development by providing materials and budget for improvements and repair schools, improve streets in the village as well as support base on the village required and periodically as necessary.
Outcome expectation	• Road condition is convenient and safe and able to support transportation and traffic by the resident in this area. • No accident and ensure traffic and transportation safety • Minimize dust particles that will be generated from the road and no disruption to the living conditions of the community and dust borne diseases reduced.

4.8.4 Implementation Methodology and Budget Estimation

Steps and procedures of actual implementation will be consulted in detail with the village cluster, village authorities in the project area, villagers and relevant district office to define detailed

methodology on actual implementation for each defined activity which is expected to start after the project is officially approved. The budget that will be used for the implementation of the community development is estimated in the table below:

Budget Estimation for the Community Development Plan Implementation

No	Community development	Lump sum budget (USD)	Responsibility Agency on implementation	Funder
		Construction Phase 3 years		
1	Village Administration Development Plan	**500/year**	Project Owner in collaboration with village authority	Project Owner
2	Infrastructure Improvement and Social-Culture Development	**500/year**	Project Owner in collaboration with relevant district office and village authority	Project Owner
Grand Total 1,000/year/village (One Thousand US dollar/year/village)				

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

The Environmental and Social Management and Monitoring Plan for the Thanaleng Dry Port & Logistics Park, Vientiane Project of the Sitthi Logistics Company Ltd emphasizes the management and monitoring of the potential environmental and social impact by the project activities during the construction and operation phase including the defining the measures for prevention, mitigation, minimize, management and monitoring the potential impact in each period comprising of:

- ✓ Air quality impact due to dust particles from the construction site clearance, construction of the project's facilities and transportation vehicle on the unpaved roads
- ✓ Noise and Vibration from project construction activities.
- ✓ Natural water quality impact particularly, surface water quality nearby the project area which is caused by erosion/sedimentation, wastewater from worker camp.
- ✓ Construction waste and solid waste from the project staff and worker.
- ✓ Occupational and Community Health and Safety that may have an accident during working that will be caused to injure and death including occupational disease.
- ✓ Accident from the project's vehicle traffic that uses for the material, equipment, etc. transportation along the road passes through the community area.
- ✓ Villager's Land use and Assets Impact
- ✓ Socio-economic, culture and landscape impact in each project phase.

5.2 Recommendations

Thanaleng Dry Port & Logistics Park, Vientiane Project shall pay attention on the implementation as follows:

- ✓ Ensure on the implementation of all measures for prevention, management, and mitigation comprehensively and effectively as specified.
- ✓ Ensure an adequate budget available for implementation of the prevention, management, and mitigation measures on potential environmental and social impact during the construction and operation phases.
- ✓ Ensure that no significant environmental and social impact during the construction and operation phases
- ✓ Cooperate and facilitate for the government on monitoring the implementation of environmental and social management and monitoring for each project phase.
- ✓ Project implementation should closely collaborate with local authority such as Vientiane Capital, Hatsayfong District, Xaysettha District and Villages Authority which is located near project.
- ✓ Ensure there is public relations and communication with village authority on the project implementation plan for each phase.

ເອກະສານຊ້ອນທ້າຍ-1: ງົບປະມານການຕິດຕາມກວດກາສິ່ງແວດລ້ອມຂອງພາກລັດ