

CHAPTER I EXECUTIVE SUMMARY

1. Executive Summary

Lai-Ara Nikmat Mujur, Lda. is a new company in Timor-Leste, it is the company that combination of Lai-Ara Shipping Agency Company, owned by Mr. Ramiro Dias Quintas and Nikmat Mujur Company from Malaysia, owned by Mr. Law See Nam and as the director for this company is Mr. Ramiro Dias Quintas. These two companies made a joint venture together as **Lai-Ara Nikmat Mujur, Lda.** Nowadays, the company was working hard for building Jetty and Fuel Storage Terminal in Dili-Liquiça road, of Aldeia Mota Ikun, Suco Mota-Ulun, Post administrative of Bazartete, Municipality of Liquiça.

The project document has been submitted to NDPCEI for recommendation on the categorization of the project. Based especially on the location factor where the project is located near sensitive environment, it was recommended that the project fall under Category A projects with the need to develop an Environmental Impact Statement. Hence, the ToR is developed based on check list for Terms of References from the Expert 101 EIS system developed by NDPCEI.

Lai-Ara Nikmat Mujur Lda. will responsible for day to day management and monitoring of the jetty and fuel storage, including implementation of the requisite legal frame works and the mitigation measures required during the pre-construction, construction, operation and decommissioning phase.

This EMP is prepared as a tool for ensuring that the identified negative environmental impacts associated with the pre-construction, construction, operation and decommissioning phase are mitigated effectively and the positive impacts are maintained or enhanced based on the proposed measures.

The potential for environmental impacts is closely related to activities carried out for the construction of two project components that will change or negatively affect the biophysical, socio-cultural-economic and public health. Lai-Ara Nikmat Mujur, L.da will mitigate all matters relating to the environment and health and safety in the workplace. The purpose of the implementation of the Environmental Management Plan (EMP) is to evaluate and control (mitigate) environmental impacts which include: controlling noise and air quality, emerging hazards, erosion control, marine life and flora and fauna, worker

health and the public health surrounding community, socio-economic conditions such as public unrest and also re-vegetation / rehabilitation for the last phase.

Lai-Ara Nikmat Mujur, Lda. will ensure that the EMP provisions are implemented and monitored to their full extent. In the event that any alteration on the design, changing the locations or scope of the proposed project works the environmental assessment and EMP shall be reviewed and revised accordingly.

The findings of the EMP are that the environmental impacts from the construction of jetty and fuel storage that located in Motaikun, Suco Motaulun, Bazartete Post Administrative, Municipality of Liquica will be manageable if the mitigation measures established in the EMP are implemented thoroughly. The EMP also sets out the requirements for monitoring.

CHAPTER II
DETAILS OF THE PROJECT PROPONENT

LAI-ARA NIKMAT MUJUR, LDA is one new company in Timor-Leste, it was the company that combination of Lai-Ara shipping agency Company and Nikmat Mujur Company from Malaysia. These two companies joint venture as Lai-Ara Nikmat Mujur, Lda. The company has gotten the Certificate of Commercial Registration, with the company name Lai-Ara Nikmat Mujur, Lda. with registration number 1260386 that issued on 23/11/2016. The Certificate of Debts also have issued on 22/02/2017.

Recently Lai-Ara Nikmat Mujur, L.da is running a project on the construction of Jetty and Fuel Storage Terminal in Municipality of Liquica and this is also the first project of this company. The details of the project proponents are presented in **table 1**.

2. Proponent Details

Table 1. Details of the project Proponent

Name of company	Lai-Ara Nikmat Mujur, Lda.
No./ Date of Establishment	1260386 / 23 nd November 2016
Address	Rua Dili-Liquica, Aldeia Mota-Ikun, Suco Mota-Ulun, Sub-districto Bazartete, Distrito Liquiça
Phone/Fax	+(670) 7801 8488
Responsibility	Ramiro Dias Quintas
Position	Director
Contact Number	+(670) 7801 8488
Address	-
Email	r.quintas@laiara.com

CHAPTER III
DETAILS OF THE CONSULTANT

3. Details of the Consultant that Prepared the EMP

The preparation of the Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) of jetty and fuel storage terminal activities is carried out by environmental consultant (Kaduak Mineral/KM Consulting) which is the Service Provider of environmental document formulation. In this case, as for technical support from experts in the field who are environmental service providers (Engineer Professional Team/EPT Consultant) in response to the requirements of environmental assessment to obtain the Environmental License required under the Environmental Licensing Law 05/2011. The details of the Consulting that prepared EIS and EMP are;

Name of Company/Institution: “KM” Consulting Collaborate with EPT Consultant

Address : Rua Caicoli, Aldeia 03, Suco Sacoco, Vera Cruz, Dili

Contact Number : (+670) 77329534

Person in Charge : Emeliano de Oliveira, S.T.,CST

Position : Team Leader

Address : Rumbia, Caicoli, Dili, Timor Leste

Company/Institution : “KM” Consulting

we also have members of EIS document preparation and its expertise, as follows are shown in table below:

Table 2. Details of EIS Consultant

No	Name	Company/Institution	Qualification
1	Emeliano de Oliveira	“KM” Consulting	Environment
2	Maximiano de Oliveira	“KM” Consulting	Geology-Environment
3	Izaias Amaral	“KM” Consulting	Environmental Engineering
4	Noviyanti, M.T	“KM” Consulting	Environmental Engineering
5	Silvia Maria Babo	“KM” Consulting	Public Health
6	Anggela Risti Puspitasari	“KM” Consulting	Environmental Engineering
7	Yasir Agus Hartanto	EPT Consultant	Geodesy
8	Octaviano Maria Oscar	EPT Consultant	Chemical Engineering
9	Hercio Camilho Fernandes	EPT Consultant	Geological engineering
10	Sugiharto	EPT Consultant	Geodesy
11	Suzana da Costa Marcal	EPT Consultant	Geodetical Engineering

CHAPTER IV

DESCRIPTION OF THE PROJECT

4.1. Identification of the Project

LAI-ARA NIKMAT MUJUR, Lda. is a new company in Timor-Leste, it is the company that combination of LAI-ARA Shipping Agency Company, owned by Mr. Ramiro Dias Quintas and NIKMAT MUJUR Company from Malaysia, owned by Mr. Law See Nam and as the director for this company is Mr. Ramiro Dias Quintas. These two companies made a join venture together as LAI-ARA NIKMAT MUJUR, Lda. Nowadays, the company was working hard for building Jetty and fuel storage terminal in Dili-Liquica Road, Aldeia Mota-ikun, Suco Mota-Ulun, Post Administrative of Bazartete, Municipality of Liquica.

4.2. Category of the Project

The Project has been classified as Category A by the NDPCEI-ANPM. The Category has been clearly established in the letter from the joint committee NDPCEI-ANPM to the project proponent and declared that the Project is Category A (Annex 1) on 17th of July 2017 (Letter ref. 041/KK-AIA/DNCPIA-ANPM/VII/2017).

According to Timor-Leste law the project can be classified as Category A because this classification is based on the nature, size (Annex 1), technical characteristic of the project as based on Decree-Law Np. 5/2011, on Environmental License. Pursuant to the category A project above and as per Decree-Law No. 5/2011, Lai-Ara Nikmat Mujur, L.da is required to conduct a complete environmental impact study and submit the Environmental Impact Statement (EIS) and Environmental Management Plan (EMP).

4.3. Brief Description of the Nature, Size and the Location of the Project

The project located in the north-east part of Liquica Municipality in Mota-ikun, Suco Mota-ulun, Bazartete Post Administrative. While there is a widely-used village boundary map in Timor Leste, it should be noted that within the country, village affiliation is more of a cultural concept rather than a geographic boundary concept. Therefore, communities might reside within the geographical boundary of one village but identify themselves as

residents of a different village. Based on the Global Positioning System (GPS) coordinate, the project is located between 8° 33' 49,02" S' and 125° 24' 40,77" E.

Table 3. Project Location

Aldeia/Hamlet	Mota-ikun
Suco/Village	Mota-ulun
Post Administrative	Bazartete
Municipality	Liquica

Project site borders with Ulmera village in the east, Lauhata village in the west, Timor Sea in the north and hills of Bazartete in the south. No direct adverse impacts are projected in the other municipalities since the activities involved in the project will be restricted within project corridor (see general location of the project in **figure 1**).

The proposed of this project is for fuel storage terminal, divided into two stage (stage I and stage II). Components that will store to this terminal are;

Table 4. Description of Fuel Storage (tank) stage I

No	Equipment	Capacity (KL)	Function	Specification
1	T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T15	84,861 of each tank	Diesel storage tank	ASME CL 150

Other Support Facilities:

Valve (ball valve, gate valve, check valve), SS flexible Hose, Y strainer, PRV (pressure relieve valve), Pressure Gauge, Air eliminator, Solenoid Valve, reducer, centrifugal pump. All the facilities will be added more correspond to the necessity of the project. The descriptions of facilities for the proposed project are listed in the description below:

Table 5. Oil / Fuel Storage Terminal Specifications for stage I

No	Main Equipment	Function	Specification
1	TK-1, TK-2	Asphalt storage tank	ASTM 283 M GR C
2	TK-3, TK-4	Jet A1 storage tank	ASTM 283 M GR C
3	TK-5, TK-6	Diesel storage tank	ASTM 283 M GR C
4	TK-7, TK-8	Gasoline storage tank	ASTM 283 M GR C

Table 6. The Description of the Fuel Storage and Jetty for stage II

No.	Name Of Equipment	Size	Capacity	Function
1.	TK-1, TK-2	12.7m Dia x 15m H	1,500 MT	Asphalt Storage Tank
2.	TK-3, TK-4	15m Dia x 10.6m H	1,500 MT	Jet A1 storage Tank
3.	TK-5, TK-6	28.8m Dia x 16m H	5,000 MT	Diesel Storage Tank
4.	TK-7, TK-8	19.2m Dia x 13.5m H	3,000 MT	Gasoline storage Tank
5.	TK-9,TK-10,TK11	22.8M Dia x 16m H	5,000 MT	Future plan storage tank
6.	Jetty	6.3m x 13.08 m	-	Used as fuel tanker tethering
7.	Trestle	100m	-	Used as pipeline rack for process loading and unloading fuel from tanker to terminal storage tank

Workers needed for construction activity has been recruited by the contractor. As far as practicable, manpower will be sourced using local people, especially for semi-skilled and unskilled work labourers. Project workers will be provided with facilities appropriate to the circumstances of their work, including access to hygiene facilities and appropriate areas for rest. Where accommodation services are provided to project workers, policy will be put in place and implemented on the management and quality to protect and promote health, safety and well-being of the project workers, ad to provide access to or provision of services that accommodate their physical, social and cultural needs.

Table 7. Estimation of Project Manpower

No	Position	Quantity
1	Operation Manager	1
2	Safety Manager	1
3	Construction Manager	1
4	Welder	8
5	Driver	4
6	Heavy equipment operators	4
7	Skilled Labourer	10
8	Worker	30
9	Security	3
TOTAL		62

Analysis : Lai-ara Nikmat Mujur, L.da

4.4. Justification and need for the project

To develop the storage facility of petroleum product to ensure better availability of petroleum product in the state of Timor-Leste. In the other hand, the objective of the proposed project is to fulfil petroleum product demand and to balance oil price in Timor-Leste territories. The project will contribute towards the socio-economic development of the area. The direct and indirect employment to the local population during the operation of the project for both skilled and unskilled levels thereby the local population will be benefited.

This investment as an opportunity to Timorese business people to take apart on the Timor-Leste Strategic Development Plan 2011-2030 that already established by the Government in a specific Private sector Investment. The main objective of this investment is for the good of Timorese people. The petroleum product aims to distribute for various sectors: for community consumption, industry consumption, transportation, electricity, etc. This project will create job opportunity to Timorese people, especially to local community; it will increase community income likewise. This investment as already described, will also increase national income.

Given the current situation with fuel supply infrastructure in the country, there is a tremendous need to invest in the modernization of fuel supply transport and handling through the development of large scale storage and sea transport (jetty or port) facility that will allow for faster, safer and more reliable supply into the country. Hence, the idea for the development of LAIARA NIKMAT MUJUR Fuel Storage and Jetty Plant came into being.

The objectives of the development are as follows:

1. To enhance the reliability of fuel distribution in Timor-Leste.
2. To provide additional storage facility that is modern and managed in high safety standards.
3. To create job opportunity for many Timorese in every process of fuel distribution system.
4. To enhance Timor-Leste private sector's participation in strategic industries such as fuel distribution.
5. To build capacity of local operators within petroleum industry especially downstream field in Timor-Leste.

4.5. The proponent's endorsements of the EMP

Lai-Ara Nikmat Mujur, Lda commits to implement all the requirements of this Environmental Impact Statement (EIS) and the Environmental Management Plan (EMP); including implementation of requisite legal frameworks. Monitoring of the site activities will be carried out by the company. As the project's proponent and will be responsible for day-to-day management and monitoring of the project's activities consist of jetty and fuel storage terminal.

4.6. The structure of the EMP

This EMP report is organized into 21 Chapters in line with the **Annex 6** in the Ministerial Diploma Regulation on the Detailed Requirements for Screening, Scoping and the Term of Reference (ToR), Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) for Environmental Assessment 22 April 2014.

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Chapter 17	Complaints and Grievances Mechanisms
Chapter 18	Work Plan and Implementation Schedule
Chapter 19	Cost Estimates
Chapter 20	Review of the EMP
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Figure 1. General Location of the Project



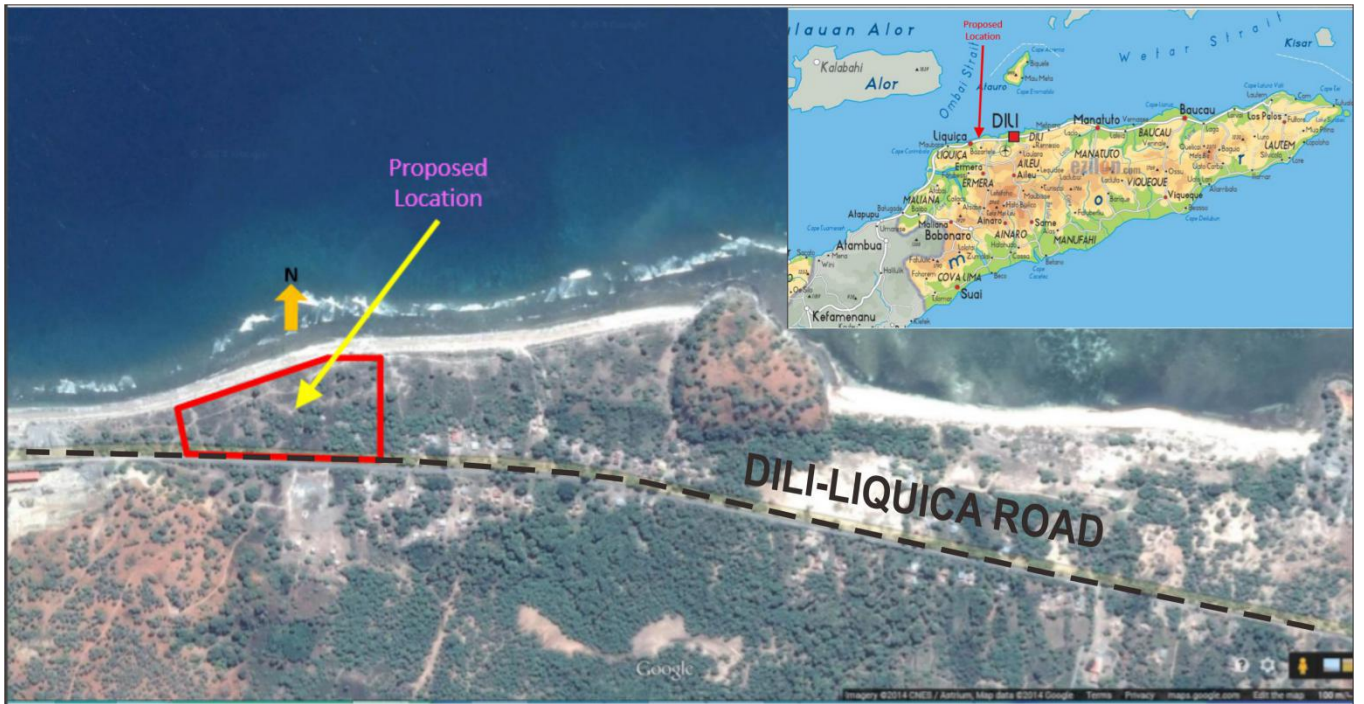


Figure 2. Proposed of the project location



Figure 3. Area affected boundary

CHAPTER V LEGAL REQUIREMENTS

5.1. Relevant Law

Timor-Leste Constitution provides the constitutional foundation for the protection of the environment and preservation of natural resources. Moreover, two other articles, i.e. Articles 61 and 139 stipulated conditions for the use and preservation of the environment and natural resources respectively with the purpose of ensuring an ecologically balanced and sustainable development approaches. Decree law 5/2011 Environmental Licensing contains procedures and other requirements related to securing environmental permit to start development activities. As of lately, guidelines for the formulation of required documents to prepare for environmental license have been developed through the Expert system that contains check list and other necessary documents for the preparation of Project Document, Environmental Impact Statement (EIS) for category A projects and Simplified EIS for category B projects. Other relevant environmental laws are listed above:

The Constitution stipulates that a healthy environment is a constitutional right. Title III of the Constitution of the Democratic Republic of Timor Leste stipulates the following provisions for Environmental Protection:

- Everyone has the right to a humane, healthy, and ecologically balanced environment and the duty to protect it and improve it for the benefit of the future generations.
- The State shall recognize the need to preserve and rationalize natural resources.
- The State should promote actions aimed at protecting the environment and safeguarding the sustainable development of the economy.

Environmental Basic Law no. 26/2012 sets the framework for other environmental legislation such as the Decree 05/2011 Environmental Licensing Law (ELL) and pending laws & regulations including the draft biodiversity law.

The Decree Law No 5/2011 Environmental Licensing. The Constitution recognizes the need for preservation and enhancement of natural resources and the need to determine actions to promote and protect the nature as an essential tool for sustainable development of economy of Timor-Leste. The law contains among others the following provisions:

- The procedure for conducting the environmental assessment, the review of application for environmental license, issuance and renewal of license.
- Categorization of the project according to severity of the environmental impacts (i.e. Category A, B and C).
- Procedures and information requirement for Category A projects (Environmental Impact Assessment) and Category B projects (Initial Environmental Examination).
- The review process for EIA and IEE documents, application for environmental license and the organization and composition of the review committee and its duties and responsibilities.
- Specific provisions for public consultation and the protection of the traditional customs and cultural practices, specifically the Impacts and Bargain Agreements (IBA) for projects required to submit EIA.
- The issuance of the decision by the Environment Authority on the review of the application and the rights of the project owner to appeal the decision.
- Classifications of environmental license, its duration and renewal; change of conditions of the license.
- The requirement for projects issued environmental license prior to the enactment of this decree-law to register with the Environmental Authority.
- The requirement for environmental monitoring, reporting obligations and duties of the license holder.
- The law also contains sanctions and penalties for violation of this decree.

Environmental Guidelines: In addition to the legal requirements DNCPIA also issues guidelines from time to time and refers to best international practice. There are 8 Environmental Guideline issued by the GoTL to regulate the activities which could create the impacts on the environment. The Guidelines are:

- Guideline #1 Environmental Requirements for Development Proposals.
- Guideline #2 Mechanised Sand and Gravel Extraction from Rivers and Borrow Pits.
- Guideline #3 Small Landfill Sitting Guideline.
- Guideline #4 Interim Tibar Landfill Operation Guidelines.
- Guideline #5 Prescribed Activities for Pollution.
- Guideline #6 Environmental Screening.
- Guideline #7 Storage of Fuel and Oil.
- Guideline #8 Ambient Noise from Stationary Sources

Occupational Health and Safety laws in Timor-Leste has not enacted or implemented regulations for working conditions, health and safety. UNTAET Regulation 2002/05, the Labour Code for Timor-Leste, is broadly relevant creates a National Labour Board to provide independent advice on occupational safety and health matters as well as training and skills development, minimum wages and other related functions. The Occupational Health and Safety Law was drafted in 2004, but has not yet been enacted.

(Draft) Biodiversity Decree Law 2012: Establish strategic significance of biodiversity to Timor Leste and promote sustainable use, conservation and fair and equitable sharing of biological resources.

Decreto Lei Governo No.6/2004 (21 de Abril de 2004), Artigo 81. Proteksaun Ambiente Aquatica, Artigo 85. Proibidu halibur ka hasai Ahu ruin (Coral Reef), Establishment of a protected areas system and protection of marine ecosystem (turtle, shark, crocodile and also coral) in Timor Leste.

Law No. 13/2017 (5 of June) Article 23 Public protection zone, Provide a good manner and a quality standard of environmental management system to community including other protection zone (cultural, private land, garden, secret area).

World Health Organization (WHO) guidelines for drinking water quality, sanitation and waste water, Safely managed sanitation and safe waste water treatment and reuse are fundamental to protect public health.

ANPM regulation NO.1/2016, of march 2016 on Installation and Operation of Storage facilities annex five about license fee for fuel storage capacity > 380 m³ it is about USD 7000 + USD 100/additional M³ annual fee

International Finance Corporation (IFC), Environmental, Health, and Safety General Guidelines. The IFC EHS Guidelines is a reference of a good international industry practice. The EHS Guidelines contains the performance levels that are generally considered and the mitigation measures used to maintain and or maximize the environmental conditions in project's activities.

This guidelines provide a necessary guidance to deal with the environmental impact on industry sector. For more information of the IFC EHS Guidelines please refer to this link: <http://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>

CHAPTER VI

INSTITUTIONAL ROLES AND RESPONSIBILITIES

6.1 The Project Proponent

Lai-Ara Nikmat Mujur, Lda. will be responsible for monitoring of the operation activities and will carried out necessary mitigation measures in the Environmental Management Plan (EMP) to address the impacts on the environment. Contractor's site Manager, Health and Safety Officer will monitor the implementation of EMP on a day to day basis. Contractor's workers will be trained to have the knowledge on how to work in a safe and environmental friendly method and implement it on their daily work activities. A good management plan, intense supervision and safe method of work will provide an efficient use of the environmental monitoring resources available to the project.

6.2 The National Directorate for Pollution Control and Environmental Impact (NDPCEI)

The NDPCEI is the regulatory body which responsible for managing the environmental aspects related to the project activities in Timor Leste to be in line with Government of Timor Leste regulations. NDPCIE will review the Contractor's application for environmental license; issue the categorization of the proposed project and with the technical capability assists the Ministry of Environment to issue the environmental license.

The EMP is submitted to NDPCEI for review and issuance of environmental clearance. Ongoing consultations with NDPCEI will be required during the operation of the project facilities and NDPCEI will have authority to monitor implementation of the EMP and ensure that environmental management and mitigation of the project is undertaken to an acceptable standard. Periodic inspections will take place with NDPCEI and Contractors.

6.3 The National Authority for Petroleum and Mineral (ANPM)

The ANPM is the governmental authority body in the Ministry of Petroleum and Mineral Resources which responsible to control the fuel storage activities in territory of Timor Leste. ANPM has the authority to approve, reject or suspend the fuel storage activity proposed by the project proponent. In term of environmental protection, ANPM

also review the contractor's health and safety plan and decommissioning plan to make sure that the jetty and fuel storage activity is not cause the impact to the environment.

Overall institutional roles and responsibilities are presented in **table 8**.

Table 8. Environmental Monitoring and Responsibility

Institution/Company	Responsibilities
Contractors (Lai-Ara Nikmat Mujur, L.da)	<ul style="list-style-type: none"> • Obtain necessary environmental license(s) from NDPCEI for associated facilities for Project works, jetty and fuel storage construction until deactivation phase. • Ensure that all workers/staff, site agents, including site supervisors and management participate in Health and Safety training sessions. • Maintain a record of training and conduct of awareness sessions for staff to ensure compliance with Environmental Management Plan and conditions in the Environmental License. • Ensure compliance with environmental statutory and regulation of the Government of Timor Leste. • Based on the results of the EMP monitoring, implement environmental corrective actions and corrective action plans, as necessary. • Respond promptly and efficiently to requests and instructions from NDPCEI for environmental corrective actions and corrective actions and implement additional environmental mitigation measures, as necessary. • Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP.
NDPCEI/MCIE	<ul style="list-style-type: none"> • In a joint committee with ANPM review and approve environmental assessment reports required by the GoTL • Issue, and renew environmental licenses as required by the GoTL during the life-time of the project • Undertake monitoring of the project's environmental performance based on their mandate
ANPM/MPMR	<ul style="list-style-type: none"> • In a joint committee with NDPCEI review and approve environmental assessment reports required by the GoTL • Issue, and renew the fuel storage licenses as required by the GoTL law during the life-time of the project • Undertake monitoring of the project's environmental performance, health and safety and reclamation plan based on their mandate

CHAPTER VII
SUMMARY OF IMPACT

The Environmental Management Plan (EMP) contains a number of methods to identify the potential of environmental impacts that may take place during the project activity phases. It also provides procedures and measurements in order to avoid, minimize or offset the environmental impacts resulting from the execution of the project.

The summary of the proposed mitigation measures is presented in the matrix of Environmental Monitoring and Management Plan **table 9**.

Table 9. Summary of Key Environmental Impact, Mitigation and Monitoring Responsibility

Source of Impacts	Environmental Impacts	Mitigation Methods	Monitoring Responsibility/Cost
PRE-OPERATION PHASE			
Land clearing and compaction of land in the project location	Increase air pollution and noisy to the worker also to to community around the project site	Observation and collecting data in the field	Contractor
	Removal of trees (flora) in the project site	Re-vegetation in the project site	Contractor
	Health & safety at work To the labour	Capacity development, socialization to worker, free PPE	Contractor
Mobilisation of materials and equipment	Public Unrest	Public consultation and negotiation	Contractor
CONSTRUCTION AND OPERATION PHASE			
Construction and building of jetty, welding the fuel storage and other facilities	Increasing noisy and contamination dust to the air pollution	Observation and collecting data in the project site	Contractor
	Groundwater contamination, increase turbidity to the sea and impact to the marine life	Observation and collecting data in the project site	Contractor
	Safety at work and public health by the air pollution, dust and noisy	Public consultation, HSE plan, give free PPE	Contractor

Source of Impacts	Environmental Impacts	Mitigation Methods	Monitoring Responsibility/Cost
	Loss of coral and public unrest	Visual inspection, socialization to community	Contractor
Increase waste (liquid and solid)	Contamination to seawater, groundwater and public unrest	Public consultation, visual inspection and monitoring	Contractor
Mobilization of material construction (steel/iron and other equipment)	Increase noise to public that live near and worker, public and worker health, waste disposal	Visual inspection, data collection, public consultation and waste management	Contractor
Job opportunity	Public unrest, social impact (envious)	Public consultation, survey and observation in the field	Contractor
DECOMMISSIONING PHASE			
Take out fuel storage, jetty and other facilities and mobilization material	Health and safety at work and noisy	Give free PPE and monitoring	Contractor
	Waste (liquid and solid)	Routine disposal, observation in the field	Contractor

CHAPTER VIII
DESCRIPTION OF PROPOSED MITIGATION MEASURES

8.1 Description of the project for each Phase

A. Pre- Construction

Site preparation for Jetty construction and fuel storage for this phase includes only Land Acquisition and Soil Compaction and will also affect the social around the project site, Potential environmental hypothetical impacts and the nature of the impact.

1. Methodology and approach

In the pre-construction stage, activities include land clearing, soil compaction, fencing and socialization. Methodology and study approaches that will be used are field surveys and interviews. For land clearing activities, the study approach used was a field survey. The clearing of 29,800 m² of land used as the Jetty and Fuel Storage Terminal will have an impact. For socialization, the study approach used was interviews with local residents from one house to another. After an agreement with chefe suco and chefe aldeia, a meeting was held with the community around the project.

2. Scope of the assessment

In the pre-construction stage the following activities are carried out:

- a. Land clearing
- b. Socialization to the surrounding community

3. Identification of impacts

a). Land clearing

- Decreased air quality due to increased dust so that it can cause air pollution around the project site. Dust is produced from soil compaction because the land at the project site is uneven so the truck goes in and out of the project site carrying the material.
- Impact on the sea and coastal ecology. Loss of life in coastal areas (flora and fauna) in the field of land acquisition (project location)
- Decreased health of people around the project site. Will have an impact on people who live close to the project site, as a result of dust generated at this pre-construction stage.

b).Community Socialization

- Community unrest at the project site. Public unrest occurs as a result of air pollution from mobilization materials and equipment which will affect the health of the local community. Public unrest can also occur when recruiting workers.

4. Determination of significance of those impacts

a). Land clearing

- Decreased air quality due to increased dust so that it can cause air pollution around the project site. Dust is produced from soil compaction because the land at the project site is uneven so the truck goes in and out of the project site carrying the material.
- Loss of life in coastal areas (flora and fauna)
Local impacts, direct and indirect, are short-term because they are not so significant and manageable
- Declining public health
Temporary moderate impact (short term), only trapped during preparation, insignificant, can be avoided and minimized

b).Community socialization

- Impact is only temporary, as long as mobilization activities are not significant it can be avoided and managed

5. Mitigation measures & incorporation of mitigation measures into project design

a). Land clearing

The steps applied to minimize impact (mitigation). The agreed location for the project area must be cleaned before installing the facility. But the loss of vegetation will be minimized in the area and some trees will be left to shade. At the time of land clearing, there is increased dust around the project.

Mitigation measures include:

- Watering the project land and truck tires with water
- Cover for trucks carrying land / material in and out of the project.

- The presence of fencing around the location of the activity can reduce the spread of Dust and Flue Gas to the community around the location of the activity.
- Reducing the speed of the car to 30 km / hour
- At the time of construction, greening is carried out at the project site
- Opening vegetation during survey and demarcation activities will be minimized. The large trees to be removed will be clearly marked, only the trees marked in the boundary will be deleted.
- Trees that are not within the work area will not be cut except for engineering or justifiable safety reasons.
- Construction workers will be notified of general environmental protection and the need to avoid unnecessary felling of trees whenever possible

b) Community socialization

The steps applied to minimize the social impact (mitigation) of any compensation needed from property loss include:

- Work will be limited to approved limits.
- Discuss and negotiate first with the affected community.
- Conduct a survey before activities begin to identify all affected community members.
- Identification of natural resources, infrastructure and other basic services that will be lost.
- Establish harmonious social interaction with the surrounding population.

6. Determination of any residual impacts

The residual impact of pre-construction activities is to cause a pile of garbage. Garbage from the results of land clearing will be transported using trucks by cooperating with the garbage transporters so that the waste is brought to the Tibar landfill.

B. Construction

After completing the pre-construction phase, construction of the Jetty and fuel storage structure will begin. The types of impacts include the impact of site preparation

(underground water quality, sea water, vibration, noise, and air quality) and the impact of building a pier structure to the sea (sea floor). Other impacts of equipment operations will also have an impact on health and safety in the workplace and solid and liquid waste.

1. Methodology and approach

During the construction phase includes the construction of the Jetty and the fuel storage structure begins. The methodology and study approach that will be used is field survey and data collection using tools. Retrieval of data using tools such as noise (anemometer), ground water (laboratory & portable analysis), sea water (laboratory analysis), and air quality (TSP carbon monoxide meter, physical analysis, and laboratory analysis).

2. Scope of the assessment

In the construction phase includes activities such as the following:

- a) Construction of installation of steel support and frame, and construction of beams and also other facility of Jetty and build of storage

3. Identification of impacts

- a) Construction of installation of steel support and frame, and construction of beams and also other facility of Jetty and build of storage
 - Sea water:
 - sea water pollution and coastal ecology
 - Changes in current patterns and wave movements that can lead to the beach so that it can cause erosion
 - Stagnant puddles can form behind the structure
 - Noise
 - Noise from material construction and heavy equipment used for beating will be affected for the Community but specifically for Workers
 - Vibration
 - will have an impact on the coastal area so as to allow coastal erosion (decrease) due to vibration generated by heavy equipment during the construction of the pier and its facilities
 - Mobilization of material installations from steel
 - increase air pollution, noise and also public health due to transportation that transports material to the project site

- Health Safety at the Workplace
 - this activity will have an impact on workers, during the construction phase, especially the safety of workers at work
- Liquid and Solid Waste
 - Waste produced from workers every day, solid waste and liquid waste
 - Waste derived from construction of materials and heavy equipment

4. Determination of significance of those impacts

- a) Construction of installation of steel support and frame, and construction of beams and also other facility of Jetty and build of storage
 - Sea water

Localized around the jetty structure, it is only temporary for the ecology of sea and sea water, only temporarily during the jetty construction process, negative but manageable and insignificant, unavoidable
 - Noise

Only around the construction of the project, the impact is negative, significant but can be managed and minimized.
 - Vibration

occur around the manufacture and installation of iron, temporary during construction and not so significant around the manufacture and installation of iron, temporary during construction and not so significant
 - Mobilization of material installation from steel

Will be affected for the community and labour but not significant, only at the project site (temporary impact) can be managed
 - Safety of health at work

During the construction phase, only at the project site (temporary), not significant and manageable and minimizing negative impacts
 - Liquid waste and solid waste

Localized, short term (temporary / during the construction phase), negative but not significant, can be managed

5. Mitigation measures & incorporation of mitigation measures into project design

The contractor is obliged to implement all reasonable precautions to protect the health and safety of workers and third parties. Mobilizing installation of materials from steel to the project site will bring interaction between local residents and construction workers. mitigation measures to be implemented are as follows:

Mitigation measures include:

- Planting green plants and ornamental plants
- Conduct biomediation processes, including releasing insects to neutralize marine pollution caused by oil spills
- The distribution of masks so as not to be exposed to dust
- Turn off the vehicle engine when loading and unloading
- Transport and dispose of domestic waste and construction waste out of the Project location within a maximum period of 24 hours by the Contractor. Cleaning / washing truck tires / vehicles that exit the project so as not to contaminate the road around the project.
- The contractor is to ensure that the actions of workers outside the workplace are controlled and the Suco code and rules of behaviour are observed at all times. Every time workers must respect village boundaries and landowners and recognize and follow village regulations and behavioural provisions.
- Suco protocol (village) which is discussed with workers as part of awareness of mobilization activities.
- Hire and train as many local workers as possible using the nearest social worker.
- Construction camps will be established in areas with adequate drainage to prevent logging in camps and establishment of mosquito breeding sites.
- Drinking water, clean water for bathing, hygienic sanitation facilities / toilets with adequate water supply, workers / resting canteens and first aid facilities will be provided.
- Solid and liquid waste will be managed in line with the provisions of the EMP waste management section.
- Provision of adequate safety equipment (hard helmets, face masks, eye glasses, earplugs, gloves, reflective jackets and shoes) for workers.

- Age Signal and security provided at the office and work yard including notification of the start of work, installing safety barriers as required by villagers, marking work areas and preventing unauthorized people (especially children) from entering the area.

6. Determination of any residual impacts

In the construction phase, there will be residual impacts such as garbage and building materials. For the waste from the contractor, it has been cooperating with the garbage transport truck and then taken to the landfill.

C. Operation

Operation and management of jetty structure, activities happening will involve ship traffic and regular maintenance of the structure, and about fuel storage are related especially to oil spill and fire hazard. Magnitude of impacts will depend on the scale of the spill and fire with impacts range from slight (small spill with no noticeable impacts on surrounding environment/communities).

1. Methodology and approach

Operations and structure management of the jetty, activities that occur will involve ship traffic and routine maintenance of structures, and regarding fuel storage related primarily to oil spills and fire hazards. The methodology and study approach that will be used is field survey and data collection using tools. Retrieval of data using tools such as noise (anemometer), ground water (laboratory & portable analysis) and sea water (laboratory analysis)

2. Scope of the assessment

- a) Ship mobilization (ship activities)
- b) Dock maintenance (including repairing the repaired dock)
- c) Tank storage terminal (fuel storage)

3. Identification of impacts

- a. Ship mobilization (ship activities)
 - Water quality:
 - Turbidity with vessel mobilization and waste water
 - Contamination, sea and coastal

- Fuel spill
 - negligent workers and inaccurate as well as natural disasters
 - Liquid and solid waste
 - From workers, ship activities every day and other garbage
- b. Maintenance (including repairing the repaired dock)
- Water quality:
 - Contamination of marine ecology and coastal ecology
 - Anti-corrosion re-application
 - Repairing and replacing parts
 - Hazardous Waste (Liquid):
 - From the workshop that will be affected for the flora and fauna near the project site
- c. Tank storage terminal (fuel storage)
- Fire and Explosion:
 - It cannot be explained but we already have a Standard Operating Procedure (SOP) to manage and mitigate and monitor
 - Noise and Vibration:
 - As long as the tank receives fuel from the dock, there will be no vibration and noise, but if there is a sudden explosion.
4. Determination of significance of those impacts
- a) Ship mobilization (ship activities)
- Water quality
 - Localized around the transportation road, not significant, only temporary (short-term) and not negative
 - Fuel spill
 - Depending on the scale of the spill. Can be spread to a wider area, long term and significant even though it can be avoided
 - Liquid and solid waste
 - Localized, can be significant to sensitive flora and fauna, can be avoided
- b) Dock maintenance (including repairing the repaired dock)
- Water quality

Localized, can be significant to sensitive flora and fauna, temporary during repairs.

➤ Hazardous waste (liquid)

Localized but dependent on the quantity of waste (liquid), temporary, medium term, negative impact, can be managed

c) Tank storage terminal (fuel storage)

➤ Fire and explosion

Depending on the scale of the explosion, significant, negative, temporary, can be managed and reduced

➤ Noise and vibration

-Local, insignificant, indirect, short term, if the activity runs normal

-Local, significant, negative, medium term, if not going well, but we reduce everything during the process and activities every day

5. Mitigation measures & incorporation of mitigation measures into project design
mitigation measures to be implemented are as follows:

- Manufacturing equipment is maintained to good standards. Equipment will be inspected periodically to ensure they are maintained in the framework and will be recorded by the contractor as part of environmental monitoring.
- Conduct bioremediation processes, including releasing insects to neutralize marine pollution caused by oil spills
- management of activities that have the potential to have an impact on the comfort, health and safety of the community.
- debriefing skills / training to workers about occupational health and safety systems (k3)
- The release of toxic residues, hazardous materials and oil-contaminated water must be banned and all oily waste must be brought to the Tibar oil disposal facility as required by NDE.
- Provision of temporary sanitation facilities with waste disposed off at Tibar waste water treatment plant

- For solid waste, a TPS (temporary garbage disposal site) must be provided which will be brought / disposed of using a garbage truck for disposal to landfill (landfill)
- For liquid waste there must be management for liquid waste so that later it does not have a negative impact on the environment
- Availability of Fire water system (for buildings) and Foam system (for oil tanks)

6. Determination of any residual impacts

The residual impact of operational activities is solid and liquid waste. Waste will be disposed of by cooperating with the carrier of waste so that it is brought to the Tibar landfill.

D. Decommissioning

At the end of the project life cycle, the location of the jetty and all related facilities will be deleted. The land used will be restored as an existing condition before or to a better condition. The decommissioning plan will be provided to manage work activities during post closure from the project location.

1. Methodology and approach

At the end of the project life cycle, the location of the jetty and all related facilities will be deleted. The methodology and study approach to be used are field surveys and interviews with residents around the project site.

2. Scope of the assessment

- a) The land contract is completed, the operation stops
- b) Demolition of existing port and oil tank in the project location
- c) Cleaning, release of electricity

3. Identification of impacts

- a) The land contract is completed, the operation stops
There is anxiety about the surrounding community because job opportunities and job opportunities are gone.
- b) Demolition of ports and oil tanks
Noise occurs at the project site due to the demolition of ports and oil tanks

- c) Cleaning, release of electricity
Decreased air quality due to increased dust around the project site

4. Determination of significance of those impacts

- a) The land contract is completed, the operation stops impact is only temporary, insignificant can be managed
- b) Demolition of existing port and oil tank in the project location only around the construction of the project, the impact is negative, significant but can be managed and minimized.
- c) Cleaning and release of electricity
Impact only temporarily at the project location, not significant, can be managed and minimized

5. Mitigation measures & incorporation of mitigation measures into project design

The decommissioning plan will be provided to manage work activities during post closure from the project location. The mitigation measures are as follows:

- initiator to prepare a detailed decommissioning plan to remove and decontaminate all areas in one year before site closure.
- Supporters to safely cut off electricity supply.

6. Determination of any residual impact

The residual impact of decommissioning activities is Waste. The garbage is transported using a truck in collaboration with the garbage carrier so that the garbage is taken to the Tibar landfill.

CHAPTER IX
GOVERNING PARAMETER

Even though the fundamental laws and guidelines have been put in place and actively implemented within the country, the government have not yet declare the environmental standard as the parameters to control discharged pollutants to the environment.

For this absence, the environmental best practice which is acceptable worldwide such as IFC Environmental, Health and Safety Guidelines is recommended to be used as governing standard. Following tables present the standard of IFC EHS Guidelines for Mining.

Table 10. Effluent Discharge Guidelines

Pollutants	Units	Guideline Value
pH	S.U.	6 – 9
COD	mg/L	150
BODs	mg/L	50
Oil and Grease	mg/L	10
Total nitrogen	mg/L	10
Total phosphorus	mg/L	2
Total Suspended Solids	mg/L	50
Total Coliform bacteria	MPN/100 mL	400
Temperature	°C	<3 degree differential
Note: Metals concentrations represent total metals		

Table 11. Drinking water quality (WHO guidelines)

Parameter	Units	WHO Guideline
pH	S.U.	6,5 - 8,5
TDS	mg/L	1000
E. Conductivity	Ms	100 ms - 1 ms
Turbiditas	(NTU)	5 (NTU)
NH3 - N	mg/L	1,5
NO3 - N	mg/L	50
Iron (Fe)	mg/L	0,3
Total Coliform	MPN	0
F. Coli	MPN	0
Mn.	mg/L	0,5
Flouride	mg/L	1,5
Note: If one of the parameter is higher, have to treatment before drink		

Table 12. Noise Limit for Various Working Environment

Locations / Activities	Equivalent level LA_{Bq}, 8h	Maximum LA_{max}, fast
Heavy industry	85 dB(A)	110 dB(A)
Light industry	50 – 65 dB(A)	110 dB(A)
Open office, control room, service counter or similar	45 – 50 dB(A)	-
Individual office	45 – 50 dB(A)	-
Classroom , lecture hall	35 – 40 dB(A)	-
Hospital	30 – 35 dB(A)	40 dB(A)

Table 13. Noise Level (dBA)

Receptor	One Hour Laeq (dBA)	
	Daytime 07:00-22:00	Nighttime 22:00-07:00
Residential; institution; Educational ⁵⁵	55	45
Industrial; commercial	70	70

These guideline standards provide a necessary guidance to deal with the environmental impact on industry sector. For more information of the IFC EHS Guidelines please refer to this link: www.ifc.org/ifcct/enviro.nsf/Content/EnvironmentalGuidelines.

CHAPTER X

MONITORING PROGRAM

10.1 Monitoring Requirements

In response to the environmental impacts identified during the environmental assessment, an environmental monitoring plan has been developed as the based mitigation measures to be used.

The monitoring will comprise surveillance to check that the contractor is meeting the provisions of the approved EMP and all other governmental requirements during the project's life-time.

10.2 Monitoring Parameters

The Environmental Management and Monitoring Plan (**Table 14**) describes the potential impacts and its correspondence mitigation measures inclusive with the parameters to be monitored and frequency of monitoring as well as the responsibilities aspect.

10.3 Environmental Management Cost

The cost of environmental management and monitoring measures has been included in the project capital. The total estimated capital for project operation including implementation of the Environmental Management Plan is US\$ 13,186.070.69. This budgeted will be used to manage the project operation to be in line with the Environmental Management Plan and the conditions in the Environmental License and to ensure that the mitigation measures and monitoring requirements are properly implemented and founded.

Table 14. Environmental Management and Monitoring Plan

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
PRE-OPERATION PHASE							
Land clearing and compaction of land in the project location	Minor loss of vegetation (flora) during the clearing and land compaction in the pre operation phase	<ul style="list-style-type: none"> Vegetation (flora) clearance during surveying and demarcation activities will be minimized, major trees to be removed will be clearly marked, only marked trees within the boundary will be removed Trees that are not within the working areas will not be cut unless for justifiable engineering or safety reasons Construction workers will be informed about general environmental protection and the need to avoid un-necessary felling of trees wherever possible Flora (vegetation) that not affected near the project site keep protect and monitoring By undertaking planting in the project site with rare plants for that area as replacing flora that loss 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Area of vegetation within the project boundary	During the activities of the land clearing and land compaction, every 6 months after that	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI
Mobilization of work equipment, sand, rock, iron/steel and buildings material to the project site	Disturbance of the public health, because of increasing dust and also increasing of the noisy	<ul style="list-style-type: none"> Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with adequate tail-boards and side-boards, and are adequately covered with a tarpaulin during transportation. Routine watering to the project site and around the project, especially when the surface dry Selection system, methods, and technology that low of noise or that give small sound (about 50 dBA) Using of the personal protection equipment (PPE) like ear plug (during near the source of sound) Regulate velocity of vehicles no more than 30 km/hour in the project area 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Observation in the field, directly measuring using sound level meter (dBA) , and carbon monoxide meter (CO) Comparing result of measuring with the ambient noisy, Ambient Noise level guideline from IFC 2018	During the mobilization of equipment and material, around the project site and community that near the project site, visual inspection	Project Proponent (Lai-Ara Nikmat Mujur, L.da)

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
		<ul style="list-style-type: none"> Do maintenance to the system of cleansing for all vehicles that transported sand, rock, materials Organized socialization to the worker for using the personal protection equipment during the operational Organize free treatment to the community around the project site (if this operational affected) 					
CONSTRUCTION PHASE							
Mobilization of construction materials and building material for jetty and fuel tank, and also building of base camp	Air pollution; Emission of exhaust from vehicles/machineries and dust generating activities, emission gas and dust no exceed standard of air pollution by IFC guidelines	<p><u>Technology method:</u></p> <ul style="list-style-type: none"> Using personal protection equipment (masker) for worker that near the source of impact Reduce velocity of vehicles in the project location and around the area up to ≤ 30 km/hour Construction equipment will be maintained to a good standard. The equipment will be checked at regular intervals to ensure they are maintained in working order. Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with adequate tail-boards and side-boards, and are adequately covered with a tarpaulin during transportation. Periodic qualitative air quality monitoring. Watering routine three times for one day on the roads for minimize the dust <p><u>Social Economy method:</u></p> <ul style="list-style-type: none"> Organize socialization/public consultation to the all worker about for using personal protective equipment Organized free medical check up or treatment to the community around the project site (if affected) 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Directly measuring for the air quality using carbon monoxide (CO) meter, directly measuring using anemometer (knows air direction, velocity), According to IFC guidelines about air quality.	During the mobilization of equipments and materials, around the project site (every time where mobilization begin)	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
Construction activity begin (fence bar) and building of office/base camp and also operational base camp	Air pollution; Emission of exhaust from vehicles/machineries and dust generating activities, emission gas and dust no exceed standard of air pollution by IFC guidelines	<p><u>Technology method:</u></p> <ul style="list-style-type: none"> • Selecting the technology that produce low emission until not impact to the air pollution and decreasing dust • Using personal protection equipment (masker) for worker that near the source of impact • Reduce velocity of vehicles in the project location and around the area up to ≤ 30 km/hour • Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with adequate tail-boards and side-boards, and are adequately covered with a tarpaulin during transportation. • Periodic qualitative air quality monitoring. • Watering routine three times for one day on the roads for minimize the dust <p><u>Social Economy method:</u></p> <ul style="list-style-type: none"> • Organize socialization/public consultation to the all worker about for using personal protective equipment • Organized free medical check up or treatment to the community around the project site (if affected) 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Directly measuring for the air quality using carbon monoxide (CO) meter (measuring two time before and during construction), directly measuring using anemometer (knows air direction, velocity) (measuring one time before construction)	During the activities of the building begin, and will be monitoring every one month around the project area	Project Proponent (Lai-Ara Nikmat Mujur, L.da)
	In-sanitation of environment (liquid and solid waste)	<ul style="list-style-type: none"> • Provide dustbin that according to type of rubbish (organic and inorganic) in the project location • Socialization about behaviour of healthy life in a healthy society for worker and community around the project • Collaborate with relevant authority about carrier of waste material, so that not heap in project location • Utilization of waste materials and other waste of construction for another necessity 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Around the project location, socialization and survey	During the construction phase, will be monitoring 2 time during every 6 months, visual inspection,	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
		<ul style="list-style-type: none"> • Building simple temporary trash with a sufficient quantity, before transport to dumping-tip • Making of the main-water (dirty) that will be miss-pent to septic tank for temporary 				Period for treatment septic tank every month	
Transported construction material and equipment including material for building jetty and fuel storage, and also welding jetty/port catwalk, welding of fuel tank and the other facilities	Increasing of noisy to the worker that near the source impact (level of noise not exceed IFC guideline about Ambient noise)	<u>Technology method:</u> <ul style="list-style-type: none"> • Selecting the technology that produce low noisy, so not affected to the worker • Using of personal protective equipment (ear plug) for reduce the sound (during near the source of impact) • Reduce velocity of vehicles in the project location and around the area up to ≤ 30 km/hour • Determinate operational of vehicles only (07.30am-16.00pm OTL) <u>Social Economy method:</u> <ul style="list-style-type: none"> • Organize socialization/public consultation to the all worker about for using personal protective equipment to anticipate and mitigate impact of noisy 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Observation in the field and measuring noisy using sound level meter (dBA), compare with guidelines IFC about noisy level. Checking operational time (did still operated some of equipment up to 18:00pm OTL)	Observation on in monitoring in the project site (one time in six months) during the building of jetty and fuel tank	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI
	Increasing turbidity in marine water (only temporary) and contamination to the groundwater	<ul style="list-style-type: none"> • Provide dustbin that according to type of rubbish (organic and inorganic) in the project location • Provide/preparing waste water treatment plant (WWTP) and drainage (Specially for oil and another chemical hazard) before throw into the sea and ditch. • Building of sediment control facility according to needs • Controlling and treatment septic tank and sedimentation pool one time in a using table control 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Parameter groundwater such as; PH, Salinity TDS and EC (for Physics test), and for chemical and microbiology test analysis in laboratory, WHO guidelines for drinking water.	Monitoring every month in the project location, Period for treatment septic tank every month	Project Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
	Job opportunity (recruitment of labour); no have public unrest/complaint in suco Motaulun.	<ul style="list-style-type: none"> • Provide employment opportunities for community around the area, specially in aldeia motaikun to join in the project activities • Provide information about job opportunities transparently to the community around the project location • Create a work program for community development for the short term and long term • Making coordination with a local authority (sucos, post administrative and municipality of liquica) about job opportunity 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Period to be monitoring will be held during the building of jetty and welding of fuel tank according to needs of company	During the recruitment of labour and vacancy opening	Project Proponent (Lai-Ara Nikmat Mujur, L.da)
	In-sanitation of environment (liquid and solid waste) in the project site and around the project location	<ul style="list-style-type: none"> • Provide dustbin that according to type of rubbish (organic and inorganic) in the project location • Socialization about behaviour of healthy life in a healthy society for worker and community around the project • Collaborate with relevant authority about carrier of waste material, so that not heap in project location • Utilization of waste materials and other waste of construction for another necessity • Building simple temporary trash with a sufficient quantity, before transport to dumping-tip • Making of the main-water (dirty) that will be miss-pent to septic tank for temporary 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project Cost	Around the project location, socialization and survey	During the construction phase, will be monitoring 2 time during every 6 months, visual inspection. Period for treatment septic tank every month	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI
	Health and safety at work (don't have any accident in project location) and also don't have disease by the project activities, awareness of occupational health and	<ul style="list-style-type: none"> • Capacity development and training of first aid, job safety analysis (JSA) and about health and safety to the worker • Implemented standard operational procedure (SOP) about health and safety environment (HSE) 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Environmental management plan and emergency response plan; Ensure storage sites are using	During the construction and building of jetty and fuel storage terminal in area	Project Proponent (Lai-Ara Nikmat Mujur, L.da)

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
	safety environment to all worker	<ul style="list-style-type: none"> Put every symbol or traffic sign about safety in project area Socialization to workers about personal protection equipment and how to use and also simple introduction about job safety analysis Health and safety inspection every month or routine (about fire extinguisher, hydrant, septic tank) 			existing concrete base; Spills cleaned, materials that messiness will be organize	monthly in project location, monitoring one month during construction phase	
OPERATION PHASE							
Operational of fuel activities and mobilization of vehicles to the Lai-Ara Nikmat Mujur Company (Fuel Storage)	Traffic and access disruption, Health and safety to worker and also community around the project location	<ul style="list-style-type: none"> Signs and other appropriate safety features and traffic control devices will be used to indicate around and in front the gate Put traffic light in the project area that will be influence to the traffic jam. Establishment of safety measures as required by law and provision of first aid facilities at work sites, in vehicles and establishment of an first aid/health post at the office. The proponent will conduct of training for all workers on safety and environmental hygiene at no cost to the employees. Instruction and induction weekly basis for all workers by the EHSO in health and safety matters, including road safety is required for all operatives before they start work. Lighting is required in any work takes place at night and the local community shall be informed well in advance. Workers shall be provided with appropriate personnel protection equipment (PPE) such as safety boots, helmets, reflector vest, gloves, protective clothes, dust mask, goggles, and ear protection at no cost to the workers. 	Project Proponent and local authority (Motaulun village)	Project cost	Area of the Project and also community that near the project site	During the operational of Lai-Ara Nikmat Mujur, L.da, monthly monitoring to the all facilities of traffic sight	Project Proponent (Lai-Ara NIKmat Mujur, L.da)

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
	Waste disposal (solid) by worker because of activities every day	<ul style="list-style-type: none"> • Provide dustbin that according to type of rubbish (organic and inorganic) in the project location • Socialization about behaviour of healthy life in a healthy society for worker • Collaborate with relevant authority about carrier of waste material, so that not heap in project location • Utilization of waste materials and other waste of construction for another necessity • Building simple temporary trash with a sufficient quantity, before transport to dumping-tip <p>Making of the main-water (dirty) that will be miss-pent to septic tank for temporary</p>	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Area of the Project location (Lai-Ara Nikmat Mujur, L.da)	Monitoring every month during the operation phase, visual inspection	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI
DECOMMISSIONING PHASE							
Decommissioning and rehabilitation	Public unrest and perception, solid waste, health and safety at work and community around the project site	<ul style="list-style-type: none"> • Proponent to prepare detailed decommissioning plan to remove and decontaminate all areas withing, one year before project location closure (end of the activities). • Decommissioning of jetty and fuel storage and other associated facilities carried out in line with environmental management plan. • Proponent to disconnect electrical supply safely. • Eliminate unacceptable health hazard and ensure public safety. • Ensure that not affected to the neighboring properties (community land). All land will be for temporary uses will be rehabilitated to original condition or better condition with a planting trees. • Re-vegetation with local fast growing species, or other plants in consultation with the land owners and xefe suco, will be carried out incrementally and as quickly as possible after work 	Project Proponent (Lai-Ara Nikmat Mujur, L.da)	Project cost	Area of the Project and also community that near the project site, Electrical Supply safely disconnected.	During Decommissioning and Rehabilitation Plan, waste will be monitoring during the transported	Project Proponent (Lai-Ara Nikmat Mujur, L.da) Supervisor or controller by NDCPEI

Project activities	Environmental Impact	Mitigation measures to be included in EMP	Mitigation Responsibility	Mitigation Cost (\$)	Parameter to be monitored	Frequency and means of verification	Monitoring Responsibility
		<ul style="list-style-type: none"> Spoils, rubbish or any material will not be disposed of within any marine system including coastal areas. suitable disposal sites will be designated in consultation with land owner, community around and xefe suco 					

CHAPTER XI

REPORTING REQUIREMENTS

The daily monitoring will be recorded and will be used as the base information on compiling the monthly/quarterly or annual report with inclusion of the Environmental Management Plan (EMP) compliance and the health and safety environment. The reports mentioned above will be circulated to the NDPCEI if required.

The contractor will monitor and record closely the environmental mitigation measures are completely implemented to address the environmental impacts cause by the project activities. Internal monitoring and inspection will be carried out accordingly to control the general project activities.

Emergency procedures have been prepared to response the emergency situations such as incidents and accidents, first aid equipment will maintain in good condition and available 24/7. The accident will be recorded to be reviewed, enhance the awareness and more importantly to review the plan considering the best mitigation measures for the emergency events.

The training will be set accordingly to cover all the environmental and health and safety environment aspects for workforce as well as the board management. The training will be developed and delivered by the experienced environmental practitioner within the project management or will invite the independent or governmental qualified environmental, health and safety specialists (HSE expert).

CHAPTER XII

REPONSIBILITIES FOR MITIGATION AND MONITORING

Lai Ara Nikmat Mujur, Lda. will be responsible for monitoring of the operation activities and will carried out necessary mitigation measures in the Environmental Management Plan (EMP) to address the impacts on the environment.

The National Directorate for Pollution Control and Environmental Impact (NDPCEI) and the National Authority for Mineral Resources (ANPM) based on their mandate under the law as the government regulatory are also have the right to monitor and audit the project proponent activities to ensure it is in line with the legal requirements.

Responsibilities for the mitigation and monitoring requirements already mentioned and presented in **table 8.** and the EMP matrix in **table 14.**

CHAPTER XIII

EMERGENCY PLAN

The contractor will identify (Jobs Safety Analysis) and implement (ISO 9001:2008 Quality Management System) measures to address unanticipated incident, arising from both natural and man-made hazards. Fire, explosion, leaks or spills are the typical of hazards which may occur for a variety of different reasons, including failure to implement operating procedures that are designed to prevent their occurrence. The measures are designed to address the emergency event in a coordinated and expeditious manner, to prevent it from injuring the health and safety of the worker and community, and to mitigate and compensate for any impact that may occur.

13.1 Emergency preparedness

To ensure the preparedness for an emergency situation, the project proponent will:

- Show all workers and subcontractors the emergency point as part of their induction.
- Display emergency procedures (traffic light) in the site office or other visible location.
- Check and mark fire extinguishers at the beginning of the project and six-monthly after that.
- Provide room first aid treatment for urgent condition

13.2 Emergency procedures

In the event that need emergency evacuation:

- Stop work immediately and vacate the workplace (safety area)
- Assist anyone in the workplace who may not be familiar with the evacuation procedures
- Call emergency services from a mobile phone. The emergency numbers are on display in the site office (if applicable).
- Notify the principal contractor (or safety manager)
- Assemble in the nominated assembly points until you receive further instructions from the principal contractor or emergency services personnel.

13.3 First aid treatment and fire training

- The project proponent will provide first aid training and fire fighter to all staff (worker) in Lai-Ara Nikmat Mujur, L.da. And also we will prepared the first aid

box and the others facilities that included in the first aid box which will be available at the project location

- If anyone becomes aware that an item of first aid is out of stock or out of date, they are to notify the Safety Officer immediately.
- First aid will be administered by trained first aid personnel.

In the event of a person being injured, trained first aid personnel should:

- Stabilize the person and administer first aid.
- Phone an ambulance (depending on the extent of the injuries).
- If emergency services are called, notify the Superior immediately. In all other circumstances notify the Project Manager or other Supervisor as soon as practicable.

CHAPTER XIV

DECOMMISSIONING PLAN

Decommissioning Plan presents the concept of the closure and post-closure rehabilitation activities. Decommissioning and rehabilitation will be accomplished in compliance with the requirements of the Government of Timor Leste (GoTL) and the proponent's future plan.

At the end of the project jetty and fuel storage terminal and all the associated facilities will be removed. The Project proponent is committed to decommission and rehabilitate the areas used for the associated facilities such as jetty and fuel storage and other facilities. The used land will be recovered as the existing condition before or to the better condition. Decommissioning plant will be provided to manage the work activities during the post closure of the project site.

The project proponent's future initiative is to reuse the building around the project site as the company office. This plan is in line with the EMP to minimize the environmental impact as the unused abandoned land will attract dumping of waste. From the positive impact, by maintain the activities in the area will still require labourers such as security, foreman etc. to be hired.

Rehabilitation Plan for jetty and fuel storage site is important issue to be concerned. Health and safety at work and waste management are the environmental impacts on the decommissioning of fuel storage. One year after caring is required to ensure the planted vegetations can be released for its natural sustain. Minimum three times a week of watering schedule and the replacing the dead vegetation is required during this period.

The project proponent will remove steel that build jetty, fuel tank (storage) and base camp (office) and other facility. Unacceptable health hazard and ensuring public safety are part of the decommissioning plan.

CHAPTER XV

CAPACITY DEVELOPMENT AND TRAINING

Capacity development and training are part of the a contractor plan and when the operational of the fuel terminal beginning Lai-ara Nikmat Mujur, L.da will be provide worker to training about first aid treatment, fire fighter and jobs safety analysis. The training will be developed and delivered by environmental practitioners who are experienced in project management or will invite environmental specialists, qualified occupational health and safety experts such as NGOs, INGOs or other government agencies.

The training to be studied will refer to the work environment, occupational safety and health and also train workers to identify the dangers that will occur. the training to be gained includes the introduction of the basic use of fire fighting, the introduction of basic first aid, Job safety analysis and Hazard operability study which will be taught by experienced Occupational Safety and Health Experts.

Everyday, project health and safety officer are responsible for carrying out safety induction and safety patrols as part of capacity building to ensure that their implementation activities are aligned with secure work systems, EMP and environmental licensing requirements.

CHAPTER XVI
PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

16.1 Public Consultation

Community involvement is part of the EIA document preparation process. Community involvement is done through announcements and public. The involvement of the community in the EIA process refers to the guidelines for community involvement in the process of environmental impact assessment and environmental permit (Decree Law No. 5/2011 Environmental License). The purpose of community involvement is:

1. The community gets information about plans for business and / or activities that have an important impact to the environment;
2. The community can submit suggestions, opinions and / or responses to plans for business and / or activities that have an important impact to the environment, which will later be used as input into the EMP process.

The planned location of the activity is in Motaulun Village, Post Administrative of Bazartete, Municipality of Liquica.

The important thing that will be conveyed to the public regarding the environmental impacts that will occur around the project site and its surroundings is;

- a. Air Pollution
- b. Condition and contamination to the groundwater and marine water
- c. Increasing of Waste (liquid and solid)
- d. Social Impact (public unrest and jealousy of social)
- e. Health and safety and public health
- f. Increasing Noisy
- g. Traffic jam
- H. Impact that caused by worker (human error)

Consultation about the planing of the construction of Jetty and Fuel Storage were carried out through the provision of information about the projects proposed to xefe suco, xefe aldeia and also the proposal of the municipality of Liquica, while direct consultation activities with the community were held on 10 August 2018. This activity was attended by

around 11 people consisted of ANPM residents / community leaders / youth around in the project site, including xefe aldeia Motaikun and xefe suco Motalun.

From public consultation carried out to the community, various inputs, suggestions and responses were obtained. The points of feedback from the community regarding the socialization of the planned activities are as follows:

1. The possibility of fire, explosion and oil spill due to the construction and operation of the jetty and fuel storage terminal Lai-Ara Nikmat Mujur, Lda, please note and good management by the initiator so as not to disturb the community around the activity.
2. Please note the impacts such as groundwater pollution or other pollution around the project site.
3. Community residents do not object to the construction of a Jetty and Fuel Storage in the area.
4. The recruitment of workers, please note that as far as possible from the surrounding community, to increase the income of the surrounding community.
5. Please pay attention to the health and safety of workers and also good quality control as well as the indication of signs so that it is easily understood by the community and workers.



Table 15. Resume of the Public Consultation

No	Name	Address/Institution	Input/suggestion
1.	Sr. Fransisco Correia	Xefe Aldeia	Project activities near the community, give best Solution for the activities not affected, give opportunities to community Around motaulun village, hope company can the right people To care and controlling about this project.
2.	Sr. Fransisco Soares	Xefe Suco Motaulun	Give employment opportunity to motaulun village and company should consider community of motaulun including xefe suco and xefe aldeia as the leader
3.	Sr. Laurindo Gomes	Community	Suggestion community have to be including in project activities (public unrest), give more opportunity to community to work in the company, suggestion give more training to worker because fuel is danger (easy burning)
4.	Sr. Gil	ANPM	If possible invited high superior (director/president company) to join in public consultation and if have another public consultation have to invited Relevant authority.
5.	Mr. Guilerme da Costa	Community/ Student	Company have to be responsibility if another day have impact to the community and also to the environment around the project site
6.	Sr. Fransisco Correia	Xefe Aldeia	Suggestion to company, if possible have to invited Ministry in Municipality Liquica (agriculture and fisheries, environment) and Ministry and National also all relevant that relation to the environment

Communities near the site indicated that they would fully support the project. Major environmental issues raised during the consultations were the dangers of explosions, oil impoverishment, groundwater contamination, occupational safety and the availability of employment opportunities for local residents of the project site. of all the results of this consultation will be used as input for the company to pay attention and to be accepted so that it can be accepted. The proponent will prioritize using the workers around Suco Motaulun to work in the construction and operation of the project. Public consultations will continue to be established to address environmental concerns within the project life span.

16.2 Information Disclosure

The disclosure of relevant environmental safeguard documents will be made in appropriate forms, ways and languages and in accessible locations to be understood by affected people and local stakeholders.

Approved EIS and EMP will be provided at the proponent's office and accessible to project stakeholders' including affected communities within the project area and surrounding project sites. EIS and EMP are considered to be public documents that information on impacts identified and mitigation and mitigation measures proposed to be implemented.

CHAPTER XVII

COMPLAINTS AND GRIEVANCES MECHANISMS

There are three phases procedures used to address the complaints from the affected persons or communities. These procedures are divided into Phase 1, Phase 2 and Phase 3 mechanism.

17.1 Phase 1 Mechanism

The project proponent will delegate a staff to liaise with local chief of Aldeia (xefe suco) to address the complaints from the affected persons. EMP will be referred to be used as the mitigation measures of the any negative impacts complained. This is the fastest mechanism to deal with the grievance.

During the process of any complaints, information, minutes of meetings, attendance list, actions taken and failure of the agreements should be recorded on to the grievance log book. After the complaints are addressed, the clearance should be written and signed by the compliant, proponent representative and the chief of Aldeia (xefe suco) for clearance.

A solution should be defined within one week to address the complaint. If the Phase 1 Mechanisms could not reach the solution to address the complaint, the Grievance Committee should be created as the level of Phase 2 Mechanism.

17.2 Phase 2 Mechanism

A Grievance Committee will be activated for the unresolved complaints from Phase 1 Mechanism. The Grievance Committee consists of following persons: Project Director, representative of post administrative, xefe suco and xefe aldeia,, representative of affected person and representative of National Directorate of Environment (for the environmental related complaint).

Within one month the issue should be resolved properly in a fair manner. Any information, minutes of meetings, attendance list, actions taken and failure of the agreements should also be recorded on to the grievance log book. After the grievances are addressed, the clearance should be written and signed by the representative persons in the grievance Committee.

17.2 Phase 3 Mechanism

If the grievance is not addressed within these mechanisms, the complainant can seek for the alternative redress within the Suco or Municipality or even go to higher judicial process. However, it is necessary to continue inform the representative person in the grievance committee about the ongoing process.

CHAPTER XVIII
WORK PLAN AND IMPLEMENTATION SCHEDULE

The work plan during the pre-operation phase mainly is conduct the environmental assessment, establish the public consultation, apply and secure the Environmental License, train the workers on environmental awareness and health and safety at work. Environmental officer and safety officer will be involved in environmental management for all aspects of the Contractor work activities.

In the operation phase, the focus of the work plan activity is implementation of the environmental management plan, site inspection/audit, corrective action request, compliance and mitigation measures, environmental monitoring and reporting progress. Renewal of the Environmental License, update the Environmental Management Plan is scheduled due to expire of the license, alteration of the project condition and the project operation time.

The implementation schedule of the work plan for the decommissioning phase (post operation) mainly concentrate on the post-closure site cleaning plan as well as fuel tank (storage) and other facilities in the project site.

Table 16. Work Plan Schedule

Project Stage	Activity	Responsibility
Pre-Construction	Environmental assessment	Contractor and EIS Consultant
	Public consultation	Contractor
	Apply for the Environmental License	Contractor
	Environmental awareness training	Contractor or qualified HSE specialist
	Hire a qualified HSE officer	Contractor
Operation phase	Implementation of EMP	Contractor
	Site Inspection	Daily inspection by the HSE Officer
	Corrective action request	NDE – ANPM or relevant authorities
	Compliance and mitigation measures	Contractor
	Monitoring and reporting	Monthly/quarterly/six Monthly by Contractor
	Renewal of Environmental License	Contractor and EIS Consultant
	Update EMP as necessary.	Contractor and EIS Consultant
Decommissioning Phase	Demolish of Fuel storage	Contractor
	Associated facilities demolish	Contractor
	Site clearance	Contractor

CHAPTER XIX

COST ESTIMATES

The cost of environmental management and monitoring measures has been included in the project capital. The total estimated capital for project operation including implementation of the Environmental Management Plan is US\$ 13,186.070.69. This budget will be used to manage the project operation to be in line with the Environmental Management Plan and the conditions in the Environmental License and to ensure that the mitigation measures and monitoring requirements are properly implemented and founded.

CHAPTER XX

RIVIEW OF THE EMP

Overall the contractor will be responsible for implementing all environmental, health and safety at work actions included in the EMP and the conditions in the Environmental License during the pre-operation, operation and decommissioning phase.

The project proponent will appoint an environmental officer and safety officer who will be responsible for site inspections on a daily and weekly basis to check compliance with the approved EMP and ensuring implementation of all health and safety requirements, these will be documented for the project progress report.

The mitigation measures presented in this EMP is considered as a living documents which subjected to be reviewed or updated as necessary based on the unidentified event happens during the project life time. In the event that mitigation measures are insufficient to control impact to acceptable levels or there is alterations on the project condition such as enlarge the area for project site, the EMP will be updated and amended to ensure that there is acceptable control of environmental impacts.

If there is an alteration on the project condition during the project operation, the project proponent will prepare an update the EMP to cover unexpected impacts or changes and all matters to support application for the renewed environmental license as necessary.

CHAPTER XXI

NON-TECHNICAL SUMMARY

This Environmental Management Plan (EMP) report is presented by Lai-Ara Nikmat Mujur, Lda. in compliance with the environmental regulations pursuant to the requirements under Decree Law 05/2011 Environmental Licensing.

Lai-Ara Nikmat Mujur, Lda. Is the proponent of the jetty and fuel storage terminal that located in Motaikun, Suco Motauun, Bazartete Post Administrative, Municipality of Liquica, the project area occupied 29.800 m² of land.

The Environmental Management Plan (EMP) is prepared by Lai-Ara Nikmat Mujur, Lda. as the project proponent with a technical support from “ KM” Consulting and EPT Consultant.

The project activities are undertaken in line with Government of Timor Leste legal requirements and adopt an international best practice for the environmental protection.

Lai-Ara Nikmat Mujur, Lda. will be responsible for monitoring of the operation activities and will carried out necessary mitigation measures in the EMP to address the impacts on the environment in close coordination with the relevant governmental authorities such as National Directorate for Pollution Control and Environmental Impact (NDPCEI) and National Authority for Petroleum and Mineral (ANPM).

Potential environmental impacts have been identified, proposed mitigation measures and monitoring responsibility during Pre-operation, Operation and Decommissioning phases are readily planned to be implemented.

Environmental assessment was conducted with the inclusion of the mitigation measures in the EMP in integration of environmental safeguard considerations into the Pre-operation, Operation and Decommissioning phases.

Environmental standards in the International Finance Corporation, Environmental, Health and Safety General Guidelines is recommended to be used as governing standard for the absence of the government environmental standard and parameters.

Monitoring requirements, monitoring parameters and environmental management cost are planned and been presented clearly in the Environmental Management and Monitoring Plan matrix. Project activities will be monitored daily, record and report. In addition, an Emergency Procedure has been planned to response the emergency situations such as incidents and accidents to prevent it from injuring the health and safety of the worker and community.

Capacity development and training will be set accordingly to cover all the environmental and health and safety aspects for workforce as well as the board management.

The methodologies used during the public consultation are door to door interviews, face-to-face and community engagement in public consultations held on 21 May 2017

The mechanisms are set (enclosed with the involvement of the local authority, governmental departments and project proponent) to address the complaints from the affected persons or communities.

Pre-operation, Operation and Decommissioning phases work plan and implementation schedule specifically focussed on the compliance with the legal requirements and the impact mitigation.

The total estimated project cost including implementation of the Environmental Management Plan is US\$ 13,186.070.69

The EMP will be reviewed to cover unexpected impacts or changes if there is an alteration on the project condition during the project operation.

Summary of all the information on the every chapters of this EMP are provided in the Non-Technical Summary accordingly.