Terms of Reference for the Formulation of Hera Fuel Storage and Jetty Development Environmental Impact Statement (EIS)

eto moving energy

PEC Consulting

This Terms of Reference (ToR) is prepared by PEC Consulting, Lda on behalf of Esperanca Timor Oan (ETO), Lda. PEC Consulting is a national environmental and engineering consulting company headquartered in Dili. Comments, suggestion and inputs to this ToR can be forwarded to pec.dili.consulting@gmail.com

Table of Contents

Chapter I – Introduction

The Fuel Storage and Hera Jetty Plant is a proposed development from Esperança Timor Oan (ETO) Lda, a Timorese-own private company. The development consists of the construction of two main components – (1) fuel storage and the associated water storage complex on approximately 2 ha land in Suco Hera, Dili District and (2) a tanker jetty or a long concrete structure stretched from the fuel storage to 600 meters off the coast. Main objectives of the development is the easing and fast tracking fuel transport and distribution for Hera Power Plant as well as for domestic transportation and other industrial supplies. Fuels to be delivered are gasoline, lubricant and HSD. Fuel transport to the facility is anticipated to happen several times a month depending on demands.

Prior to the development of this Terms of Reference (ToR), a project document has been submitted to National Directorate for the Environment (DNE) 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 checklist for Terms of References from the Expert101 EIS system developed by DNE.

As a fuel storage and sea transport development located near sensitive area and large national infrastructure, the development potentially has devastating impacts from day to day operation (cumulative impacts) as well as from large scale spill or fire accidents. It is therefore very important to develop a thorough program for impact management and monitoring measures. It is also vital to develop emergency preparedness and response procedures to any accidents that might happen. A thorough management and monitoring program will eventually result in

The nature of potential environmental impacts from the development during operation are related especially to fuel spill during transfer from tanker ship to jetty, spill from storage and spill during transfer from storage to tanker trucks for further transport. In the event of spill, both terrestrial and marine resources potentially be impacted and depending on the scale of the spill, clean up and rehabilitation might need significant resources. This situation therefore calls for the construction of appropriate mitigation measures incorporating best practices in the field during construction phase. Other temporary impacts that may occur during the construction activity include dust and noise due to construction related works, loss of valuable flora and fauna, wastewater generated by workers, solid waste related to construction activity, and others. A thorough environmental monitoring and hazard reduction procedures that protect not only the environment but also workers and community around should also be in place during operation and maintenance phase.

Chapter II –Purpose of Terms of Reference and Description of Projects

II.1 Purpose of Terms of Reference

This Terms of Reference (ToR) is being prepared for the purpose of identifying issues that are likely to be important related to potential environmental and health and safety impacts from the development. The document is prepared based on recommendation from the National Directorate of the Environment (DNMA) on the Environmental categorization of the project. That is, the project was determined to fall under Category A projects because it is located near sensitive or valuable ecosystems such as mangrove community, coral reefs and the proposed Behau Marine Protected Area. In compliance with Decree Law No. 5/2011 on Environmental Licensing, a full scale Environmental Impact Statement (EIS) document needs to be prepared.

II.2 Need for and Objectives of the Development

Reliable fuel supply for power generation, transportation, domestic and industrial use is one of the prerequisite for Timor Leste development to run smoothly. Currently, fuel supply and distribution in Timor Leste is handled by P.T. Pertamina, ETO and other smaller operators. Infrastructure that supports the supply was those that were developed during Indonesian occupation (facilities owned by P.T. Pertamina) and ETO's temporary floating storage facility at Tibar Bay. Smaller operators imported fuel through Dili Port or small ships that come from Kisar Island, Indonesia. Especially for smaller operators, transfer and handling of fuel from the ships are done manually through workers contracted to do the job, a mode of handling that can be proven hazardous for both the workers and the environment.

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 Hera 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

II.3 Proponent Details

The project is proposed by Esperança Timor Oan (ETO) Lda, Timorese-own private company. Company's contact detail is provided as follows:

Sr. NiltonTilmo G. dos Santos (President)
JL.RuaCina Rate, Dili, Timor Leste
Telephone: +670 3322336
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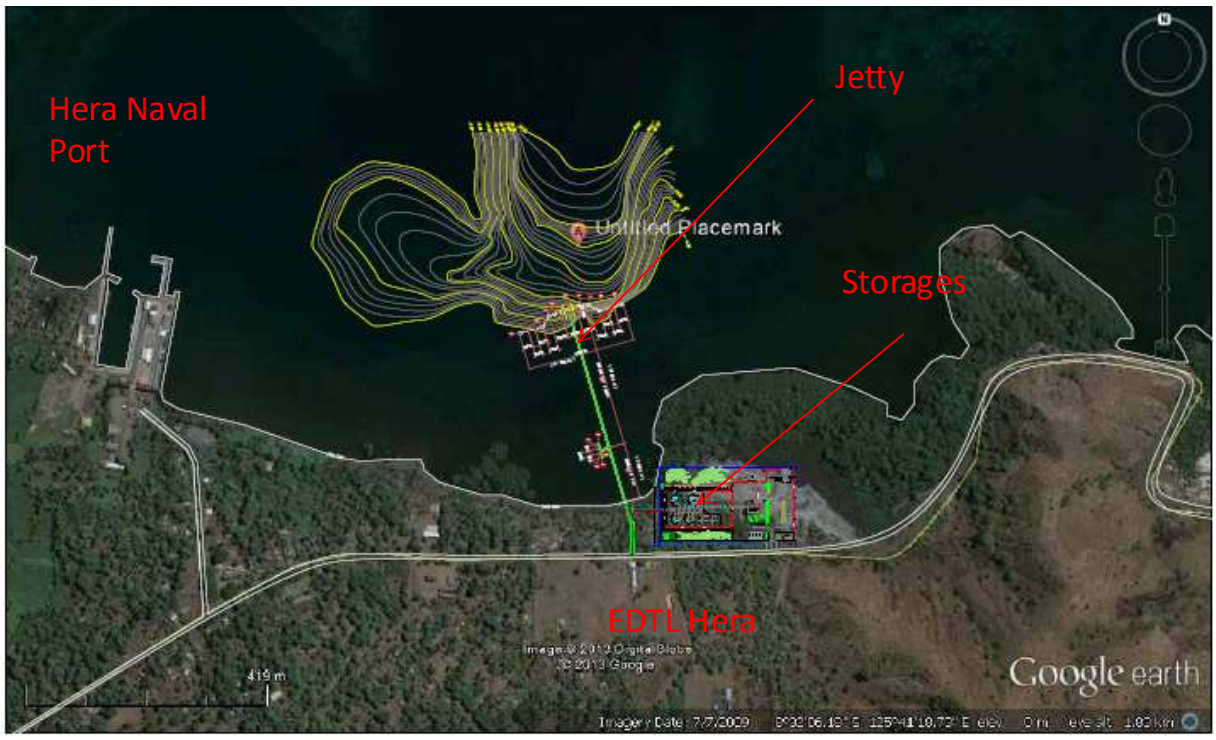
Email: info@eto.tl

ETO is a local company founded in 2000 and has been involved in fuel distribution business ever since. In 2006, ETO added fuel retail business to its operation by becoming seller of PERTAMINA's product at ETO's own fuel station. In the past few years, ETO has continued its investment within fuel supply, distribution and retail by becoming supplier for diesel fuel that are directly imported from Malaysia. After three years as diesel fuel importer, ETO has decided to invest in the modernization of supply and storage infrastructure to help meet yearly increase in demand. In the future, ETO plans to continue develop its capacity and hope to one day becoming an international trader for Timor Leste's own refinery products.

II.4 Major Component and Relevant Parts of Project

The development consists of two major components – (1) jetty development, consisted of one small jetty the size of 6x4 m with 112 m catwalk and the larger jetty the size of 12x30 m with 276 m catwalk; (2) fuel storage development consisted of six tanks the size of 2,000 kL (2 tanks), 1,000 kL (2 tanks) and 600 kL (2 tanks). The following figure contains technical drawing of major components of the project.

Figure 1. Major Component of Project



Technical drawings of relevant parts of each of the major components are provided in the following figures.

Figure 2. Relevant Parts of Jetty Component

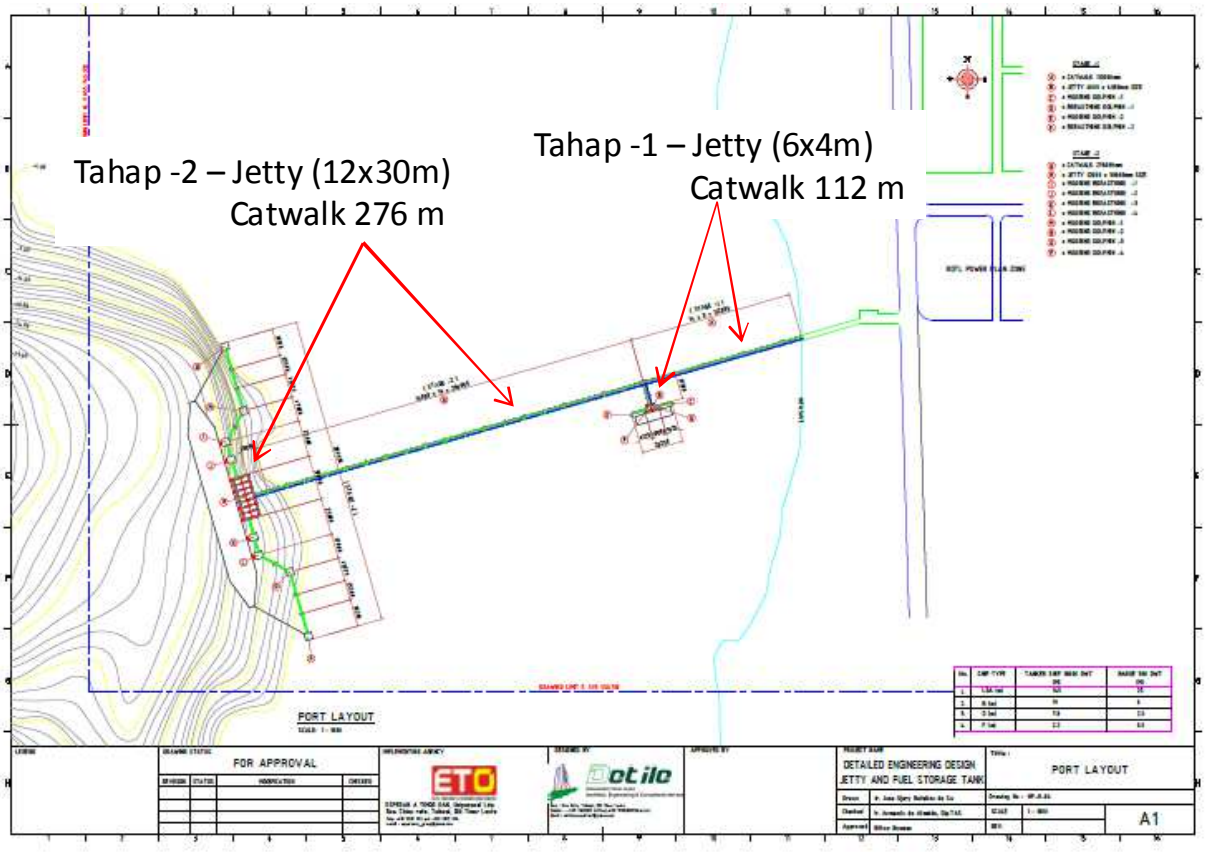
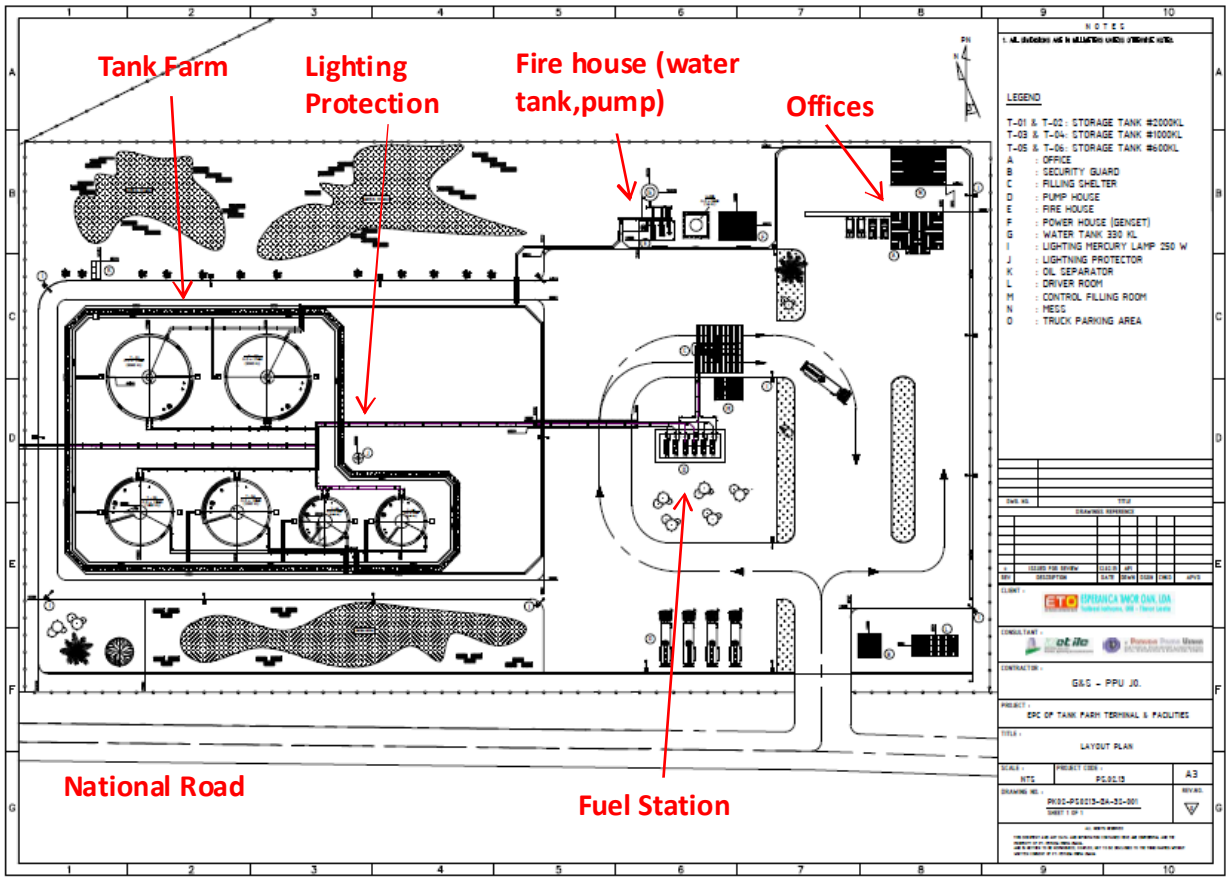


Figure 3. Relevant Parts of Fuel Storage Component



Chapter III – Environmental Status

III.1 Geographic Area and Maps

The proposed construction is located along the national road connecting Dili to Manatuto. Administratively, the project is located within Aldeia SukaerLaran, Suco Hera, Sub-district Cristo Rei, District of Dili. Project location can be reached by less than half hour driving from Dili town center. The following figure shows the location of the development in reference to the national road connecting Dili and Manatuto.

GPS coordinates of the project location are 125.688696°/-8.537717° (longitude/latitude).

Figure 4. Location of Development Relative to Dili

Five ha land has been secured by ETO through a long-term lease of 30 years with the government of Timor Leste. Core facilities (fuel storages and associated water cooling storages) will be developed on two ha land within the five ha. This leaves a buffer zone of approximately three ha between the construction and neighboring facilities.

The proposed project site is bounded by a nearby communal cemetery in the West and by mangrove communities in the East. To the south of the site is Hera Power Plant and the northern side is coastal area. The project is located along the national road connecting Dili to Manatuto.

III.2 Topography

Topographic interpretation of contour lines in the area shows original project location to be approximately 5msl. Project site is located close to the mountain range (highest elevation 45msl) that divides Christo Rei and Metinaro Subdistricts (Figure 5).

Figure 5. Topographic Profile of Surrounding Area

III.3 Hydrogeology, Potential for Groundwater and Geotechnical Study

The project is located in areas where there is generally low potential for groundwater yield.[1] A geotechnical study conducted to assess soil texture in the project location noted that water was found between 0.4 – 1.5 m from the surface (study was conducted prior to site filling, grading and compaction). Geotechnical recommendation to site preparation included the use of clean sand with less than 12% fines (compacted) or silty gravel, gravel, sand and silt mixture for filling material.

[1] Wallace et al. (2011a.)

III.4 Surface Water

No natural surface water bodies are observed on project site, however, man-made drainage ditches draining areas south from the national road can be found about 5 m to the east and 100 meters to the western part of the site (Figure 6).

Figure 6. Drainage Ditches Near Project Site

III.5 Climate and Weather

Timor Leste's temperatures vary considerably according to altitude with northern coastal areas typically registering the highest temperature. The northern areas of the county from the coast to 600 m elevation have an annual average temperature of over 24^0C. Behau areas between Dili and Manatuto were noted as having average daily maximum temperatures of between 30 and 31^0C and average daily minimum temperatures between 23 and 24^0C[2](Figures 7 and 8).

[2]Agriculture and Land-Use Geographic Informations System Project, 2007

Figure 7. Average Daily Maximum Temperatures

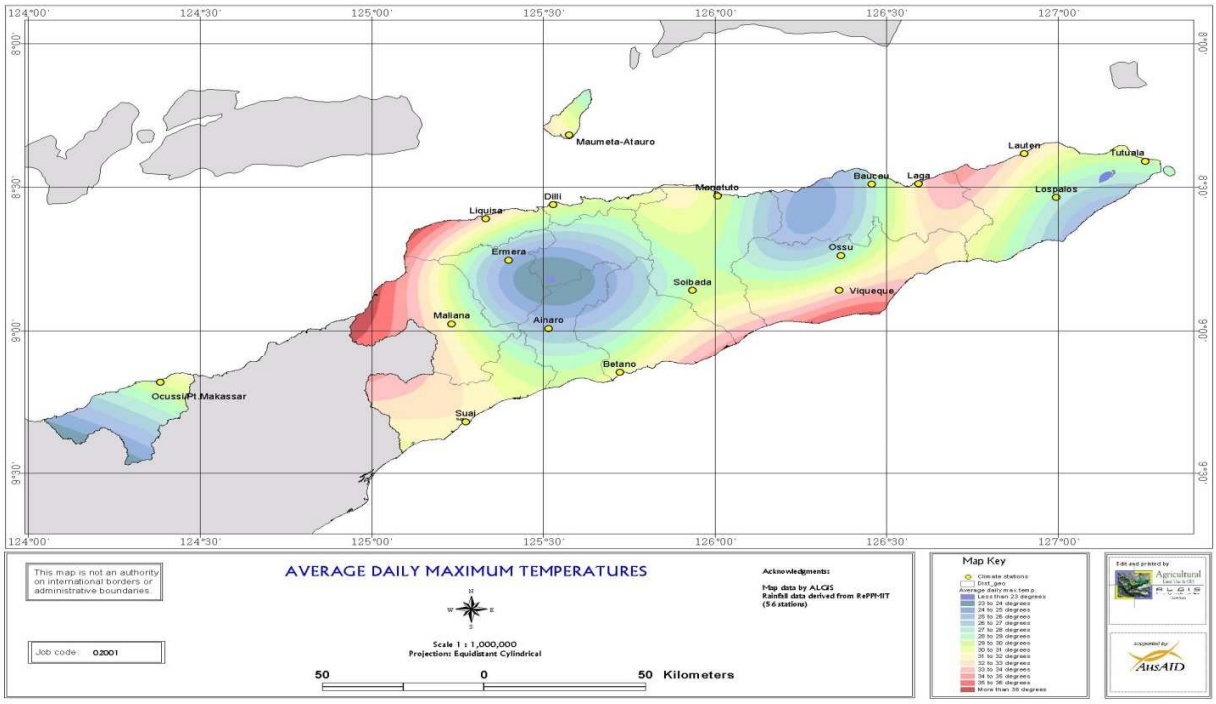
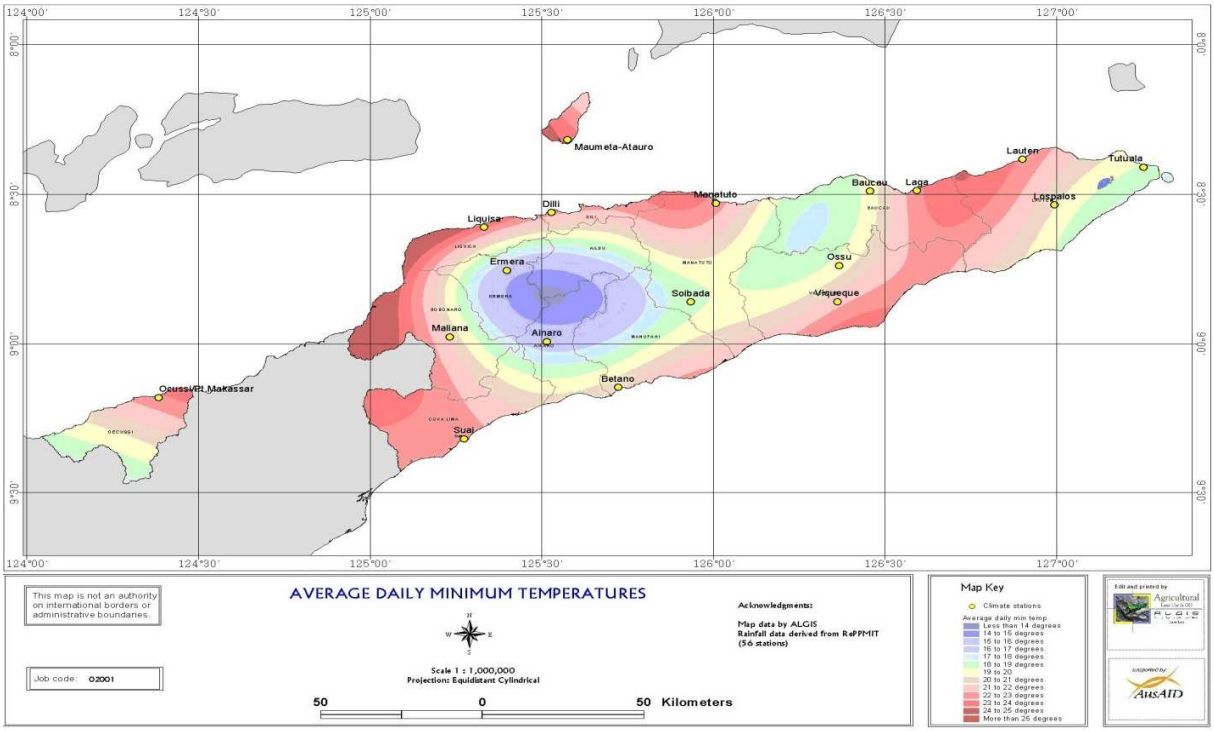
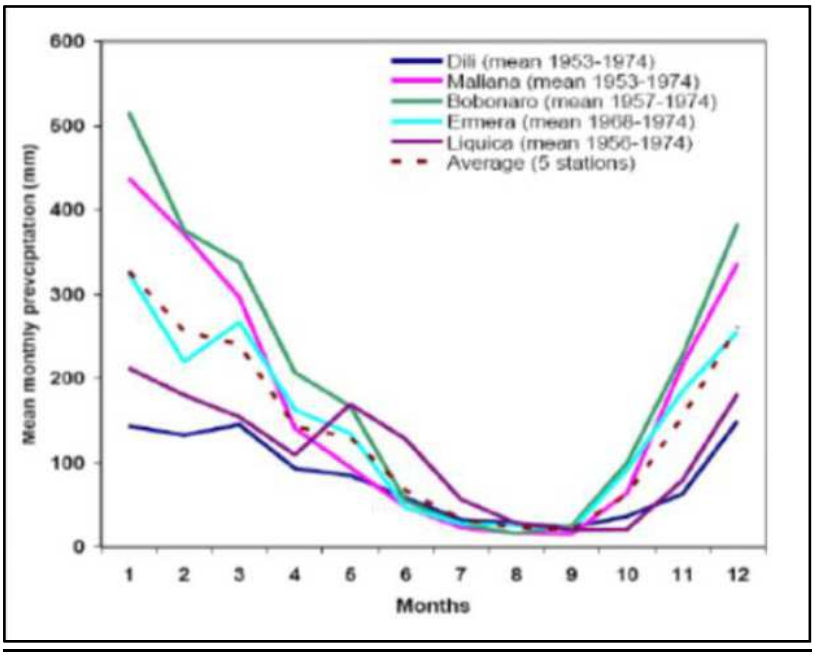


Figure 8. Average Daily Minimum Temperatures



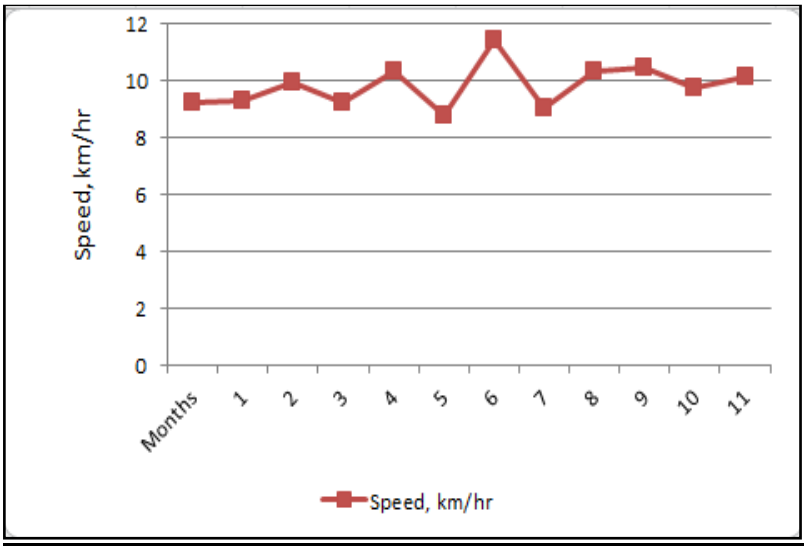
Rainfall pattern in Timor Leste is a seasonal dry tropical climate characterized by warm temperature and several months of dry period each year. The rainy season is between November to March with average mean monthly rainfall from below 50 mm to slightly higher than 300 mm (Figure 9).

Figure 9.Mean Monthly Precipitation



Wind speed in the country is typically constantly mild between 8 and 12 km/hr. Elevated wind speed happened between June and July each year.

Figure 10.Windspeed



III.6 Coastal and Marine Resources

Preliminary survey of coastal and marine resources point out to the existence of intertidal flat mangrove communities. Intertidal flats are sandy or soft sediment environment found between mean high-water and mean low water spring tides[3] generally located in low energy marine environment (generally means coastal areas where wave heights are minimum). This type of environment typically support very productive ecosystems that also function as recycling and filtering spots for organic materials from both inland and marine sources. Observed mangrove species are Soneratia, Rizhopora and Avicenia.

As part of preliminary assessment of physical characteristics of the marine ecosystem, a physical and chemical testing of the marine water will be conducted. Results from the test and discussion on the implication of the tests will be elaborated in detail in the full EIS.

III.7 Land Cover

Land cover around the project area consisted of Hera Naval Port, open area with sparse coastal vegetation, transportation infrastructure, power infrastructure in the form of power plant (EDTL Hera) and power line, mangrove communities, one residential housing, community graveyard and fishery uses especially along the coast line (Figure 11).

Figure 11. Existing Land Cover

Residential housing close to project location

Community graveyard

[3]Dyer et al. 2000

Fishery uses on coastal area west from project


Catch of the day – fishermen catch from the area


National road and electricity line


EDTL Hera


Hera Naval Port


Coastal vegetation

III.8 Changes Anticipated Before Project Begins

No significant changes are anticipated prior to the beginning of project activities. This statement is based on the fact that no other significant development is currently going on in the vicinity of project site.

Chapter IV – Legal Framework and Relevant Institution

IV.1 Legal Framework

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 Expert101 system that contains checklist 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 and their objectives are listed in Table 1.

Table 1. Relevant Laws

No	Law	Objectives
1	Decree Law No. 26/2012 on Environmental Base Law	Creation of basis for environmental legal system that is capable of defining the principles and rules of sustainable use of natural resources, holistic and integrated approach to environmental management, and reinforce the mechanisms for protection of fundamental rights of citizens
2	(Draft) Law on Biodiversity (March 2012)	Establish strategic significance of biodiversity to TL and promote sustainable use, conservation and fair and equitable sharing of biological resources
3	(Draft) Law on Protected Area (May 2013)	Protection of areas representing all ecosystems and all critical habitats for endemic and other species
4	UNTAET Law No. 19/2000 on Protected Area	Establishment of a protected areas system and protection of certain ecosystems in TL

IV.2 Relevant Stakeholders

Relevant stakeholders to the development consist of government agencies, private sector and Non-Governmental Organizations (NGOs) especially those that are actively involved in environmental programs. A list of stakeholders has been prepared as follows:

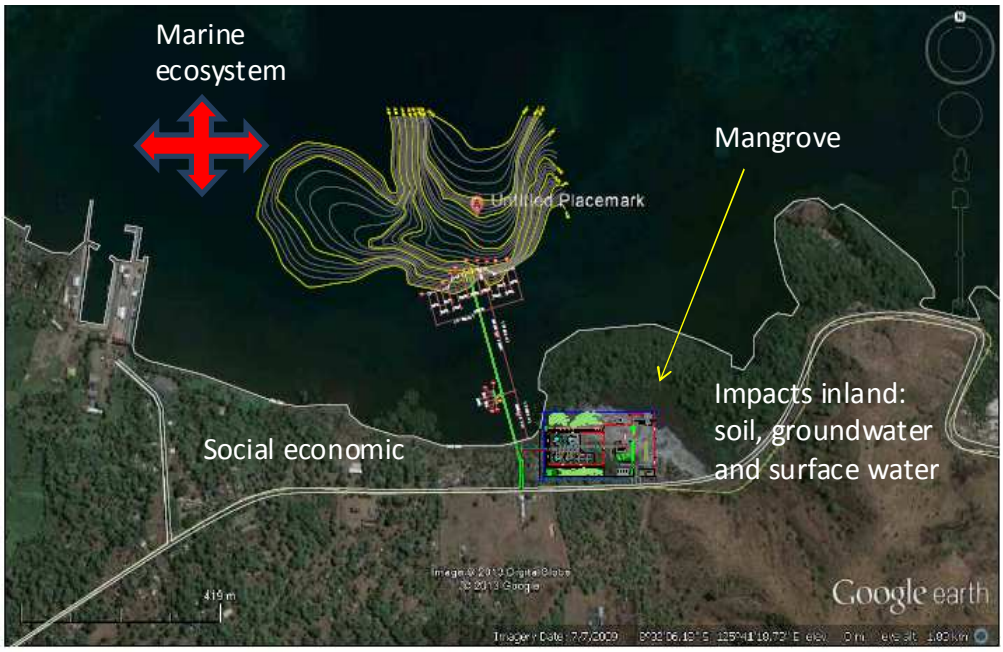
1. National Directorate for Environment
2. National Directorate for Biodiversity Protection
3. National Directorate for Road, Bridges and Flood Control
4. Downstream Directorate, National Petroleum Authority
5. National Directorate for Fisheries and Aquaculture
6. National Directorate for Forestry
7. Department of Environmental Protection, Ministry of Environment
8. Hera Chefi de Suco
9. Sukaer LaranChefi de Aldeia
10. National Directorate for Civil Protection
11. EDTL Hera
12. Timor Leste Navy
13. Pertamina
14. NGOs

Chapter V – Scoping of Impacts

V.1 Study Area

Study area includes all areas within and surrounding project location that are potentially affected by pollution or other alterations from the development. Potentially affected area are soil, ground water, surface water, mangrove communities and its associated environment (mud flats), marine ecosystem and the socio-economic characteristics of Suco Hera. Figure 12 contains illustration of the potentially affected area relative to project location.

Figure 12. Potentially Affected Area



V.2 Potential Environmental Impacts

Likely environmental impacts are closely associated to activities conducted for the construction of two components of the project that will alter or put negative influence to the existing biophysical environment. These activities are grouped into activities for site preparation (Pre-Construction), Construction and Operation and Management (After Construction).

V.2.1 From Jetty Structure

Site Preparation

Site preparation for jetty structure will involve dredging and the associated dumping of dredged material as well as removal and compaction of sand. Potential environmental impacts and the nature of the impacts are presented in Table 2.

Table 2. Types and Nature of Impacts from Site Preparation for Jetty Construction

Activities	Type of Impact	Nature of Impact
Dredging and dumping of dredged material, sand removal and compaction	**Water quality:** Increase in turbidity, Water temperature.	Localized, direct, short term (temporary), negative but not Significant, unavoidable
	Bottom contamination: Sediment and dredged Material suspended in the Water could cover bottom area	Localized, direct, could be Medium term, negative but Not significant, unavoidable
	Marine and coastal ecology: Loss of marine life in area Cleared out, cumulative Impacts from decrease in water Quality and bottom contamination	Direct and indirect, cumulative, Could be medium term, Not significant, unavoidable

Construction

Upon completion of site preparation, construction of the jetty structure will commence. Activities for the construction are presented in Table 3. Types of impacts include those impacts from site preparation (water quality, bottom contamination, marine and coastal ecology) as well as impacts from the enactment of a large structure in coastal water (coastal hydrology). Other impacts from the operation of equipment are also present, this include noise and vibration.

Table 3. Types and Nature of Impacts from Jetty Construction

Activities	Type of Impact	Nature of Impact
Construction of installation of steel support and frame, and construction of beams,etc	**Water quality, bottom contamination, marine and coastal ecology**	Localized, direct and indirect, short to medium term, cumulative, negative but not significant, unavoidable
	Coastal Hydrology	
	Changes in current pattern and wave movement that could lead to coastal erosion	Localized, indirect, Long term, negative and could be significant, unavoidable
	Stagnant pool of water may be formed behind structures	Localized especially around Jetty structure, long term, negative but not significant, unavoidable
	New structure as "attachment place"	Localized esp. on structures in the water, long term, **positive**, not significant, unavoidable
	Noise and vibration	Localized, short term, negative, not significant, unavoidable
Worker activities	**Waste management**	Localized, short term, negative, not significant, avoidable

Operation and Maintenance

Operation and management of jetty structure, activities happening will involve ship traffic and regular maintenance of the structure. Impacts associated with these activities are presented in Table 4.

Table 4. Types and Nature of Impacts from Operation and Maintenance

Activity	Type of Impact	Nature of Impact
Ship traffic	**Water quality, bottom contamination, marine and coastal ecology from:**	
	Oil spill	(Depending on scale of spill) Could be dispersed to larger area, long

		term and significant although avoidable
	Waste water	Localized, could be significant to sensitive flora and fauna, avoidable
	Garbage (solid waste)	Localized, could be significant to sensitive flora and fauna, avoidable
Maintenance of Jetty	**Water quality, bottom contamination, marine and coastal ecology from:**	
	Reapplication of anti corrosionagents	Localized, could be significant to sensitive flora and fauna
	Fixing and parts replacement	Localized, temporary, not significant

V.2.2 From Fuel Storage Structure

Major impacts from fuel storage development 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) to extensive impacts (large scale, long term) that can lead to long term alteration to ecosystem function and permanent species or asset loss. The following table contains potential environmental impacts from fuel storage development.

Table 5. Potential Environmental Impacts from Different Phases of Fuel Storage Development

Types of Impact	Pre-Construction	Construction	O&M
Water Quality and Marine Ecology	v	v	v
Terrestrial Ecology	v	v	v
Air Quality	v	v	v
Noise and Vibration	v	v	v
Waste Management	v	v	v

Oil spill	v	v	v
Fire and explosion hazard			v
Visual Quality			v

V.3 Potential Climate Change Impacts

There are two types of potential climate change impacts relevant to the development. The first are Adaptation types of impacts which are impacts that will influence the ability to adapt to changes in physical characteristics of the environment such as sea level rise, change in rainfall pattern, raising temperature, and others. The second types of impacts are the Mitigation impacts which are the impacts that will influence the ability to mitigate the increase in Greenhouse Gas (GHG) emission and to stop the loss of carbon pool (loss of trees and other vegetation) and to increase the potential for carbon sequestration.

Potential of Adaptation and Mitigation to climate change impacts are presented in Table 6.

Table 6. Relevant Parameters, Criteria and Indicators for Adaptation and Mitigation to Climate Change Impacts

	Relevant Parameters	**Criteria & Indicators**
Adaptation Sea level rise, coastal erosion, etc.	Coastal erosion	Sand movement, etc.
	Mangrove protection	Area of mangrove communities
Mitigation GHG emission, loss of carbon pool and increase potential for carbon sequestration.	Emission from vehicle and equipment, ship traffic	Level of emission, type of emitted GHG gases
	Loss of sea grass bed, coral, mangrove, existing vegetation	Area of loss coral and sea grass bed, number of trees cut down,

V.4 Potential Socio-Economic Impacts

Preliminary assessment noted that there are several potential socio-economic impacts from the development. On the positive side, there are potential for creation of jobs locally and contribution to the national economy through tax payment and asset development through direct investment. On the negative side, local community especially the fishermen might have less access to the coastal area because part of the coast will be used for activities from the facility. Additionally, there is potential disruption to social cohesion during construction due to the presence of significant number of workers.

V.5 Criteria and Indicator to Assess Impacts

Clear criteria and indicators to assess environmental (including climate change) and socio-economic impacts are needed to better predict the risk, pattern and magnitude of impacts. This information will later inform the type of management and monitoring measures that needs to be taken to address the impacts.

Table 7.Affected Area, Criteria or Indicator and Methodology

Affected Area	Criteria/Indicator	Methodology
Marine water quality	Turbidity, sedimentation, DO, salinity, temperature	Visual, onsite or laboratory test
Surface water quality	Turbidity, DO	Visual, onsite test
Soil quality	Oil spill	Visual
Ambient air quality	NO2, SO2, PM10, PM2.5	Visual, onsite test
Health of coastal and marine environment	Area of mangrove community	Visual, field survey
Workers health and safety	Days of accident in a year	Field survey, regular reporting
Climate Change Impacts	Health of mangrove communities, sand and water movement	Regular reporting

Socio-economic situation	Worker order, number local population working on the site, grievance and other complaints	Regular reporting

Chapter VI – Alternatives

Several types of alternatives are relevant for consideration for this project, namely alternatives in terms of technology used in the development, alternatives in terms of location and the status quo alternative or no development alternative. The proposed development is a fuel supply development in nature with the primary objective of creating faster, more reliable and safer methods of fuel supply for domestic consumption in Timor Leste. This mean that all alternatives considered should result in the ability to meet the above objectives.

An alternative technology will include direct piping from refinery to customer in Timor Leste or development of a less significant storage which means potentially less environmental impacts. These alternatives, however, are either not possible (for direct piping) or will make the development less efficient (for smaller storage) which means that less fuel will be able to be stored. An alternative location, on the other hand, will mean that the site is developed farther from EDTL Hera which is currently main government customer. This also means that longer piping system will have to be developed from the storage to EDTL, potentially crossing populated area.

The status quo or no development alternative will mean that existing fuel supply condition where the only significant fuel storage system is owned by P.T. Pertamina will stay as it is.

Chapter VII – Environmental Management and Monitoring Plans

VII.1 Environmental Management and Monitoring Measures for Jetty Development

Preliminarily, several potential management and monitoring measures have been identified. For jetty development, one of the most important management measures will be locating the development outside of coral reef and seagrass beds. When this is not possible, minimalizing the footprint of the structure so minimal area of coral reef and seagrass beds are cleared out should be pursued. Other relevant management measures and the preliminary monitoring measures are listed in the following table.

Table 8. Proposed Management and Monitoring Measures for Jetty Development

Potential Impacts from Activities	Proposed Management Measures	Proposed Monitoring Measures
Site Preparation and Construction	When possible, locating the jetty outside of known coral and sea grass bed	
	Minimize leak from equipment operation and careful storage of fuel and lubricant	Monitoring for leak during operation and at storage
	Construction of coastal erosion protection as needed	Monitoring for signs of coastal erosion – continue during O&M
	Careful Management of solid and liquid waste from workers activities	Monitoring for dumping of waste into the water
	Activities conducted during the day	Monitoring for noise & vibration. level
Operation and Maintenance	Minimize oil spill, waste from tanker operation, regular skimming	Monitoring for spill and waste dumping
	Maintenance dredging should be conducted after assessment of potentially toxic sediment	Monitoring for level of sedimentation

	Use of eco-friendly maintenance material	
	Minimize leak from equipment operation and careful storage of fuel and lubricant	Monitoring for leak during operation and at storage
	Careful management of solid and liquid waste from workers activities	Monitoring for dumping of waste into the water

VII.2 Environmental Management and Monitoring Measures for Fuel Storage Development

For fuel storage development, important management and monitoring measures are those measures related to oil spill protection, fire hazard management and emergency preparedness and response plan to emergency situation related to oil spill and fire protection.

Table 9. Proposed Management and Monitoring Measures for Fuel Storage Development

Potential Impacts	Proposed Management Measures	Proposed Monitoring Measures
From Fuel Storage Development		
Site Preparation and Construction	Fencing of construction area, buffer zone – install signage	
	Minimize leak from equipment operation and careful storage of fuel and lubricant	Monitoring for leak during construction and at storage
	Careful Management of solid and liquid waste from construction and workers activities	Monitoring for dumping of waste into the water and surrounding area
	Activities conducted during the day	Monitoring for noise & vibration level

	Workers order and safety, worker from local area	Monitoring of workers activity during down time
Operation and Maintenance	System for tank overfill prevention	Periodic testing of storage tank overfill prevention system
	Procedure for remote shutting of fire safety valves	Periodic testing of fire safe shut-off valve and fire hydrant system
	Procedure for environmental risk identification and containment, environmental cleaning procedure	Periodic fire safety drill
		Periodic checking for sign of oil leak in the surrounding environment
	Worker H&S protection procedure	Reporting of accident

VII.3 Management and Monitoring Measures for Climate Change Impacts

Management and Monitoring Measures for Climate Change impacts will focus on the measures that increase the adaptation and mitigation capacity of the project. This will involve especially the protection of mangrove communities nearby because of its role as natural barriers and wave breakers as well as its inherent potential for carbon sequestration.

VII.4 Management and Monitoring Measures for Socio-Economic Impacts

Management and monitoring measures for socio-economic impacts will involve measures that ensure enough access for fishermen in the community and the enactment of a grievance redress mechanism at project management.

Chapter VIII –Executive Summary

The Hera Fuel Storage and Jetty development is a proposed development from Esperança Timor Oan (ETO) Lda, a Timorese-own private company. The development consists of the construction of two main components – (1) fuel storage and (2) a tanker jetty and the long concrete structure connecting the jetty to the fuel storage.

This ToR has been developed based on recommendation from National Directorate for the Environment (DNE). Upon submission of the Project Document, DNE recommended that the project fall under Category A development that require the development of full EIS. The ToR is developed based on ToR Checklist found in the Expert101 system developed by DNE.

The project is located along national road connecting Dili and Manatuto in Aldeia SukaerLaran, Suco Hera, Sub-district Cristo Rei, District of Dili. It is planned that upon completion, the proposed development will incorporate six fuel storage tanks at 1,000 kL (two tanks for gasoline), 2,000 kL (two tanks for diesel fuel) and 600 kL (two tanks for lubricants). The tanker jetty will be approximately 388 m in length.

Project site is bounded in the West by a communal cemetery while in the East it is bounded by mangrove communities. To the South of the site is Hera Power Plant and the northern area is coastal water. Existing land use in the surrounding location consists of transportation infrastructure, power infrastructure (power line and power plant), mangrove community, one residential house, community graveyard and fishery uses. Preliminary assessment of baseline condition is of relatively healthy coastal and marine environment, low level of soil, water and air pollution.

Potential environmental impacts from the development are assessed for both the construction of tanker jetty and the construction of storage facility and its associated support facility. Impact boundaries are marine and coastal ecosystem, soil and surface water, climate change as well as socio-economic impacts that can be felt at the national (e.g. tax contribution and asset development) and local level (e.g. jobs, security disruption).

Nature of impact range from negative to positive impacts, localized to potentially significant impacts and short to potentially long term impacts.Potentially negative, significant and long term impacts are mostly avoidable and are related to oil spill and fire hazard depending on the scale.

Various government agencies, local authorities and a few national NGOs have previously been consulted in a workshop related to the development. Meaningful input was generated from the workshop. The input has been very helpful in the development of this ToR and will further advice the development of the full EIS.

Chapter IX – Transparency and Consultation

To ensure transparent EIS development process as well as on-going consultation with relevant stakeholders and affected community, this EIS formulation process will take several necessary steps as follows:

1. Conduct of stakeholder workshop – the first stakeholder workshop with the purpose of discussing draft Terms of Reference has been conducted. The workshop generated meaningful input and suggestions from stakeholders. These input and suggestion will be incorporated in the development of draft EIS. Important notes from the stakeholder workshop are listed in the following table.
2. One-on-one consultation will be conducted for the formulation of the EIS after the stakeholder workshop
3. Upon completion, draft EIS will be made available for public comments and input. Draft EIS will also be made available to all relevant stakeholders.

Table 10.Major Input and Suggestion During Stakeholder Consultation

No	Agency	Input and Suggestion
1	National Directorate for the Environment	Add applicable scale to all maps
		Drainage should not be directed to the sea due to pollutant content
		EIS should take into consideration plans for urbanization of Hera
		Clear data on affected fishery community (income level, etc)
		Clear measures to impact from water spill – cleaning, etc. what to do if spill happens, how to manage tailing
		More testing to compare results (second opinion on results)
		Emergency preparedness and response plan (include emergency route in the event of fire)
		Add National Directorate of Biodiversity and Directorates from Ministry of Public Works to the stakeholder consulted
2	National Directorate of Forestry	Emergency response plan for underwater accidents
		Adaptation and mitigation plans are important due to existence of coastal and marine biota. Long term protection to mangrove communities need to be spelled out. Idea – mangrove rehabilitation type of activities can be implemented working together with relevant organizations such as the government or the civic society sector.
		Clearly explain current status of fuel distribution to EDTL Hera.
		Status of future to EDTL power plant should be considered
		Socio-economic impact to Hera community should be clearer
3	Department of Environmental	Impacts of project activities to public health

	Health, Ministry of Health	
		Clear procedures to attend to work-related accidents. Note that facility is relatively far from large clinics.
		Clearer impact from development activities
		Workers health and safety protection from exposure to potentially hazardous substances
4	National Directorate for Civil Protection	Development need active involvement from Civil Protection due to the potential for fire hazard
		Different measures should be available for fire protection not only water.

Reference

Dyer, K. R. (Ed.), 1979. Estuarine Hydrography and Sedimentation.Estuarine and Brackish Water Sciences Association. Cambridge University Press, Cambridge.

Wallace, L., Sundaram, B, Dawson, S (2011a). Assessment of Impacts of Cliamte Change on Groundwater in Timor-Leste: a Summary report (Interim report), Geoscience Australia.