TERMS OF REFERENCES (TOR)

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY FOR LNG PLANT AND MARINE FACILITY IN BEAÇO, VIQUEQUE

Date	Rev.	Prepared by	Verified by	Approved by
		Clementino Pereira (and Team) Team Leader LNG Process	**Lourenço Soares** Marine Facility Manager	**Domingos Lequi Siga** Director – Gas Business
03-Apr-2018	**0**	CP	LS	DL
30-Apr-2018	**1**	CP	LS	DL

DOCUMENT HISTORY

Rev. No.	Section No.	Description of amendment	Date/mm/yy	Amended by
1	Header	The Term EIA has been changed to EIS & EMP	30/4-2/5/2018	GBU and QHSE Teams
	Content of Report (pg. 1-62)	"ToR EIA study" has been changed to EIS and EMP study throughout the document	30/4-2/5/2018	GBU and QHSE Teams
	Background information (pg.11)	"New town and upgrade of Airport has been removed from the document	30/4-2/5/2018	GBU and QHSE Teams
	Details of the Consultants (pg.14)	Information with regards to the consultant has been added into the document under Section 4	30/4-2/5/2018	GBU and QHSE Teams
	Legal Requirements (pg.17).	"Special Regime for Land Entitlement" has been added into the document	30/4-2/5/2018	GBU and QHSE Teams
	Study Area (pg.21	Figure 4 and APPENDIX 3 has been added into the document to reflect appropriate scale of study area.	30/4-2/5/2018	GBU and QHSE Teams
	Assessment and Evaluation (pg.47)	The Term EIA has been changed to EIS & EMP	30/4-2/5/2018	GBU and QHSE Teams
	Identified Stakeholders (pg. 48)	MCIA has been replaced with VMDpHOA.	30/4-2/5/2018	GBU and QHSE Teams

DISTRIBUTION LIST

Document No.	Revision No.	Distributed to	Date	Withdrawn on

TABLE OF CONTENT

EXECUTIVE SUMMARY

This document is the Terms of Reference (ToR) which depicts the requirements of an EIS & EMP study to be conducted for the LNG Plant and Marine Facility in Beaço, Viqueque, Timor-Leste. The main purpose of building an onshore LNG Plant is to process the natural gas through liquefaction in order to produce Liquefied Natural Gas or LNG as the main product as well as other byproducts such as Liquefied Petroleum Gas (LPG) and a small scale of condensate. The LNG Plant is designed for an initial production capacity of 5 million tonnes per annum (MPTA) or one (1) train, which may be expanded in the future to a capacity of up to 20 MTPA or four (4) trains.

Approximately 650 Ha of areas has been designated for LNG plant complex that include area reserved for further LNG train expansion plan, and marine facility. It also includes an onshore pipeline section from the pipeline landing point at the shore beach to the LNG plant.

The Onshore LNG plant and Marine Facility is located in Beaço (or Maluru), a village within the Viqueque sub-district of Viqueque Municipality.

1. INTRODUCTION

Based on the environmental licensing decree law (No. 05/2011), any project to be developed in Timor-Leste must follow the steps and requirement provided by it. The first step which is to develop the Project Document (PD) was already submitted to, reviewed and approved by, the environmental regulatory authority. National Directorate of Pollution Control and Environmental Impact (DNCPIA – Direção Nacional de Controlo Poluição e Impacto Ambiental) and National Petroleum and Mineral Authority (ANPM – Autoridade Nacional do Petroléo e Minerais) – being the environmental regulatory authority – have reviewed the PD and further classified this project as category A. The next step is to prepare a Terms of Reference (ToR) in order to be reviewed and approved by DNCPIA and ANPM.

The purpose of this document is to present the ToR for the LNG Plant and Marine Facility Component. The ToR is developed in order to prepare the Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) study for the development of LNG plant and Marine Facility components. It describes the objectives and needs of the proposed project, the scope of works and methods for carrying out the EIS and EMP Study, the existing environmental conditions, the potential impacts of the proposed project and the mechanism for conducting public consultation with the public, the stakeholders and the affected community. In addition, the ToR outlines the contents of the EIS and EMP reports that shall meet the requirements of the EIA processes as defined by the Environmental Licensing Law.

In detail, the objectives of developing this TOR are to:

» Outlining the existing baseline data, identifying data needs, and detailing methods to be used for data collection.
» Describe the potential impact and also the elements required to assess these impacts, and the potential approach for mitigating the negative impact.
» Lastly, to provide decision making information with respect to the granting (or not) of the environmental license of the applied project.

2. BACKGROUND INFORMATION

2.1 Project Overview

The government of Timor-Leste aims to develop the gas from Greater Sunrise field through the building of a subsea pipeline to onshore Timor-Leste, and with the establishment of an LNG plant to process the gas on the south coast at Beaço, the Municipality of Viqueque (200 km southeast of Dili). It is stated in the Timor-Leste 2011-2030 Strategic Development Plan (PEDN – Plano Estrategico Desenvolvimento Nacional) that the Petroleum Sector which includes the Tasi Mane Project is to become a key pillar of the nation's future development and is envisaged to bring petroleum development to Timor-Leste shores and provide direct socio-economic benefits derived from petroleum industry activities.

The Tasi Mane project foresees the development of three clusters/hubs of petroleum sector industry in the south coast of the country. It includes Timor-Leste LNG Project in Beaço to process the gas from the Greater Sunrise gas field. Timor-Leste would like to build Beaço as the LNG-hub for its gas development to stimulate socio-economic development of the country.

Beaço will be the area in which the natural gas pipeline reaches Timor-Leste land and where the LNG plant to process the gas to be located. The first phase of the LNG Plant development will establish a production capacity of 5 million tonnes per annum (MPTA) or one train, which may be expanded in the future to a capacity of up-to 20 MTPA or four trains). Approximately 650 ha area has been designated for both LNG plant and Marine Facility.

2.2 Project Needs and Objectives

The needs that arise from the Timor-Leste LNG Project Development are as follows:

- Maximise Socio-Economic benefits to Timor-Leste
- Extract maximum value from the Greater Sunrise Resource

- Greater Sunrise to form "foundation" of long term LNG/economic development of Timor-Leste.
- Provide a foundation project to enable development of common infrastructure on the south coast.
- TLNG planning will cater for up to 20 MTPA Plant capacity, which will be high value expansion after the "foundation" marine facilities and local infrastructure are developed for Greater Sunrise.

The objectives of the Timor-Leste LNG Project development are to meet the needs above and to implement the Tasi Mane project as stated in the PEDN. In addition there will be benefits derived from the Project development as follows:

- Maximise revenue flow to the State through Equity Share by TIMOR GAP direct participation in the project on behalf of the State
- **Jobs** : 5,000+ during construction & 300 direct jobs during operation; over 1,500 indirect jobs (industry ratio: 1 direct job generates up to 5 indirect jobs)
- Timor-Leste businesses & locals can compete to supply **fabrications, services and work** worth almost **$5 billion in capex**[1] (before production) – **not generated without the project**
- Timor-Leste businesses & locals can compete to supply **services and goods** for LNG, pipeline and tanker operations worth over **$1.5 billion**[2] (25 years) – which will **not be generated without the project**
- **New businesses** such as maintenance, engineering, small fabrications, repairing, specialised weldings, specialised equipment cleaning, transport, gardening, cleaning, security guard services, chemical supplies, LNG tanker business, tug boats, electricity usage, offices and accomodation, hotels and entertainment, food, fruit and vegetable supplies, etc. – **all of which will generate thousands of indirect jobs, and stimulate economic activities around Beaço and Timor-Leste at large, paying taxes and contributing to GDP growth.**

[1] CAPEX – Capital Expenditures, i.e. costs to be incurred during the construction of a facility.
[2] Source: TIMOR GAP Business Projection

- **Trade and commerce** – Timor-Leste can be more active in world trade and known as LNG supplier
- Build **geopolitical energy influence**
- **Reduce trade inbalance** by increasing exports
- **Increase hard currency** into Timor-Leste economy
- **Infrastructure**: set the basis for future expansions
- **Education**: science & technology exposure, experience and transfer

2.3 Project Major Components

Timor-Leste LNG project consist of three (3) major components, namely Sunrise-Beaço Pipeline, LNG plant and Marine Facility. The LNG plant would be the facility at which the transported natural gas would be processed.

This ToR is prepared solely on the components of LNG plant and Marine Facility. The details of these two components will be provided in Section 7 (Scope of Work).

3. PROPONENT DETAILS

The project is proposed by TIMOR GAP, E.P., the National Oil and Gas Company of Timor-Leste, with contact details as follows:

Mr. Francisco Monteiro (President &CEO)

Level 3, Timor Plaza, Suite 301-314

Rua Presidente Nicolao Lobato, Comoro-Dili, Timor-Leste

Mobile: +670 7714-7083

T. +670 3310953, F. +670 3310952

Email: francisco.monteiro@timorgap.com

And in care of;

1) Mr. Domingos Lequi Siga Maria (Director of Gas Business Unit)

   Level 3, Timor Plaza, Suite 301-314

   Rua Presidente Nicolao Lobato, Comoro-Dili, Timor-Leste

   Mobile: +670 7714-7087

   T. +670 3310953, F. +670 3310952

   Email: domingos.lequisiga@timorgap.com

2) Mr. Leonel Hornai Da Cruz (Manager of OHS)

   Level 3, Timor Plaza, Suite 301-314

   Rua Presidente Nicolao Lobato, Comoro-Dili, Timor-Leste

   Mobile: (+670) 77193315

   T. (+670) 331 0953, Ext: 165

   Email: leonel.hornai@timorgap.com

3) Lourenco Soares (Marine Facility Manager)

   Level 3, Timor Plaza, Suite 301-314

Rua Presidente Nicolao Lobato, Comoro-Dili, Timor-Leste

Mobile: (+670) 77344184

T. +670 3310953, F. +670 3310952

Email: lourenco.soares@timorgap.com

4. CONSULTANT DETAILS

The detailed information of the Consultant for the EIA study will be provided upon the completion of the project tender/bidding. The project tender process and procedure will follow procurement procedures and guidelines of TIMOR GAP in selecting the potential consultant to carry out the EIS & EMP Study.

5. LEGAL REQUIREMENTS

The EIA study will be conducted in accordance with the Government of Timor-Leste Decree Law no. 5/2011 'Environmental Licensing'. As defined in Annex 1 of the decree law, all petroleum projects are classified as Category A and therefore, require assessment by means of an EIA. DNCPIA have also provided their opinion that this project – LNG Plant & Marine Facility in Beaço – falls under category A.

Article 8 of Decree Law no. 5/2011 defines the following phases of an EIA:

- ✓ Presentation of the project for the evaluation and application for environmental licensing
- ✓ Public Consultation
- ✓ Technical analysis and opinion by the evaluation committee
- ✓ Decision on the procedure of environment impact assessment and allocation of the environmental license

Likewise, there are also a range of legislation and guidelines that are deemed applicable for the EIA study for the proposed project. The legislation and guidelines are grouped into three distinct categories – namely International Standards and Guidelines, National Regulation, and International Agreement and Conventions – which are described below;

1. International Standards and Guidelines
    - » European Union (EIA Directive);
    - » World Bank guidelines (Environmental Assessment Sourcebook)
    - » IFC (International Finance Corporation) Performance Standards (Social and Environmental Assessment and Management Systems; Pollution prevention and abatement);
    - » ISO 14001: 2015; Environmental Management Systems
    - » OHSAS 18001: 2008; Occupational Health and Safety Management System

2. National Regulation

- » Decree Law No 5/2015 Environmental Licensing
- » UNTAET Regulation No 19/2000 on designated protected areas
- » Government Resolutions No 25/2011 Protection of Culture Heritage
- » Decree Law No 11/2003 Telecommunication Law
- » Decree Law no. 18/2008 Article 17 Protection of Agriculture & Fisheries Area
- » Downstream Law No. 1/2012
- » Decree Law No.32/2016: Operacoes Petroliferas Offshore em Timor-Leste
- » Environmental Basic Law No 26/2012
- » Traditional Regulation and Custom 'Tara-Bandu'
- » Port Decree Law No. 19/2003
- » Road Transport Decree Law No. 2/2003
- » Preparation of environment impact assessment of petroleum activities in the JPDA area
- » Special Regime for Land Entitlement (Lei N.º 13/2017 de 5 de Junho, Regime Especial Para a Definição da Titularidade Dos Bens Imóveis).

3. International Agreement and Conventions

- » United Nation Framework Convention on Climate Change (UNFCCC) 1994 (Control of Greenhouse Gas Emission)
- » United Nations Convention on Biological Diversity: 1992
- » UNESCO Convention Concerning the protection of the world cultural and Natural Heritage: 1972

Aside from the above legislation and guidelines, the contractor is also required to provide other relevant environmental law and regulation as well as guidelines that will be applied for the proposed project.

6. STUDY AREA

6.1 Geographical and Topographical Area

The proposed project is planned to be developed in the Beaço community area. The two major components, LNG Plant and Marine facility of the proposed project are located within one complex in the designated location. The Beaço area has five community groups or Aldeia, a number of cemeteries, farms, three (3) small rivers or streams, swamps and community potable water. In addition, within the area there is an existing road connection between Viqueque and Uatolari (a sub-district of Viqueque and about 20 km away from the town).

Approximately 650 Ha areas has been designated for LNG plant complex, which include area reserved for further LNG train expansion plan, marine facility (LNG port) and pipeline landing point. Topographically, the proposed project is located in a flat terrain with a few hills on the north side.

6.2 Project Time Line

The planned schedule for carrying out the EIS & EMP study is projected to be started in 2018 with a proposed length of study from about 6 to 12 month period.

6.3 Maps

6.3.1 Map of Viqueque and Beaço

Figure 1 shows the map of Viqueque Municipality and Beaço area within which the LNG plant and marine facility will be built. The yellow shaded areas are the villages most likely to be affected in relation to the development of Timor-Leste LNG project.

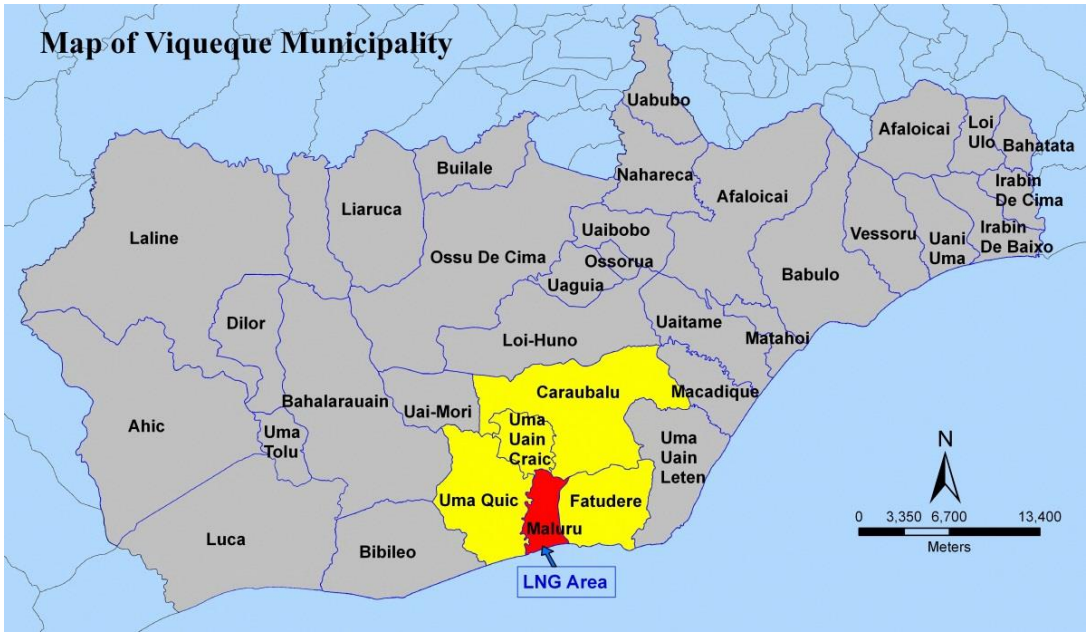

Figure 1 – Map of Viqueque and Beaço

6.3.2 Maps of LNG Project Components

Figure 2 shows the map of the major components of LNG project, which include LNG plant and marine facility (LNG port). The same map with higher resolution is shown in **APPENDIX 1.**

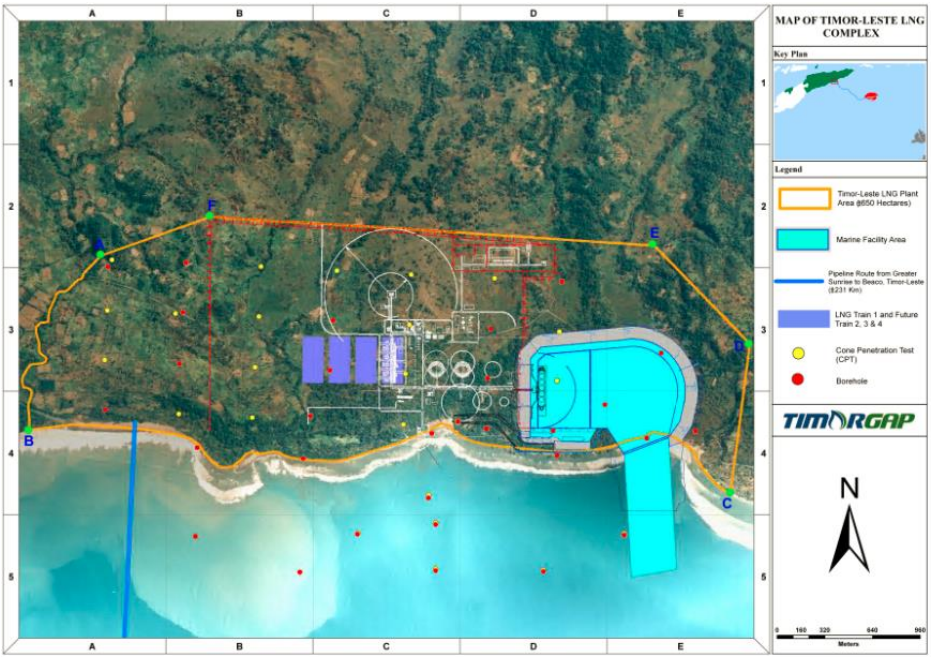

Figure 2 – Map of Timor-Leste LNG Complex

Figure 3 shows the overall layout of LNG Plant Complex. The same map with higher resolution is presented in **APPENDIX 2.**

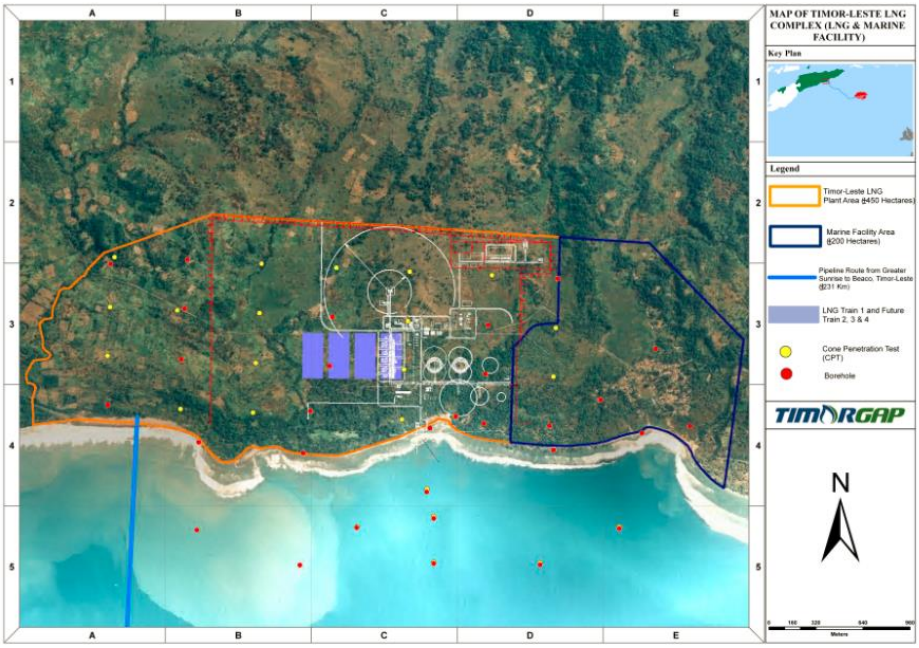

Figure 3 – Area Designated for LNG Plant

In addition, the plot plan for the LNG complex has been completed and can be seen in figure 4. It includes the various components of the LNG plant. The same map with the better picture resolution can be found in **APPENDIX 3**.

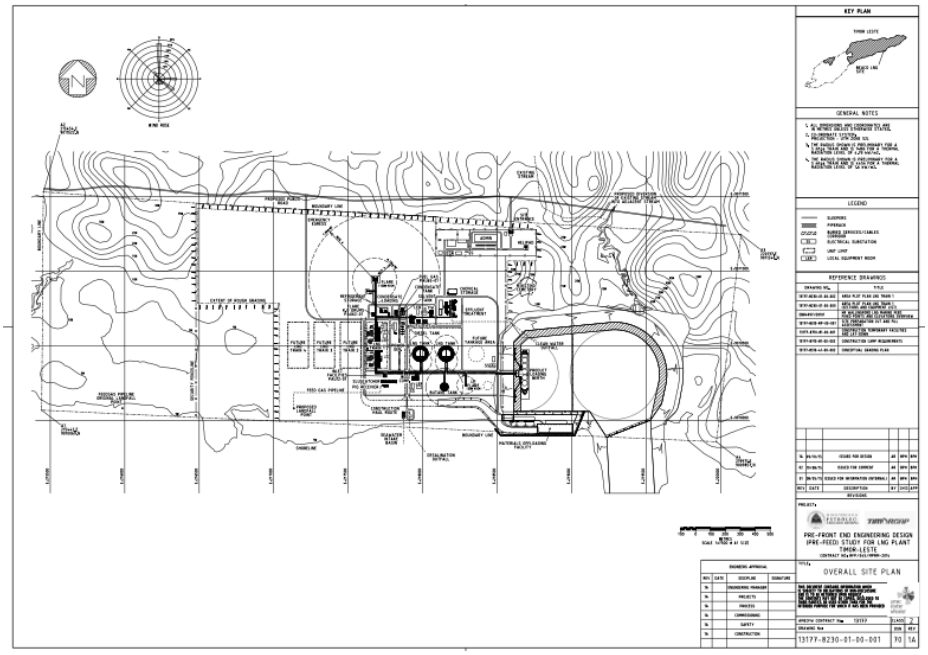

Figure 4 - LNG Overall Layout (Source: TIMOR GAP - TLNG Pre FEED Study, 2016)

Furthermore, figure 5 presents specifically the details of major units of the LNG Plant.

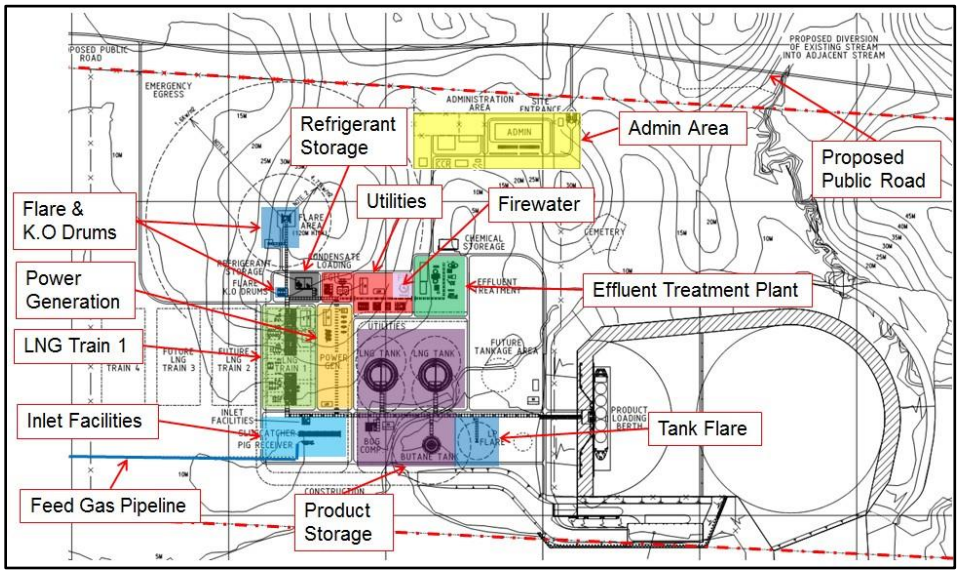

Figure 5- Major Units of LNG Plant (Source: TIMOR GAP-LNG Plant Pre FEED Study, 2016)

Figure 6 below shows the detail drawing of Marine Facility. The same map with higher resolution is annexed in **APPENDIX 4**.

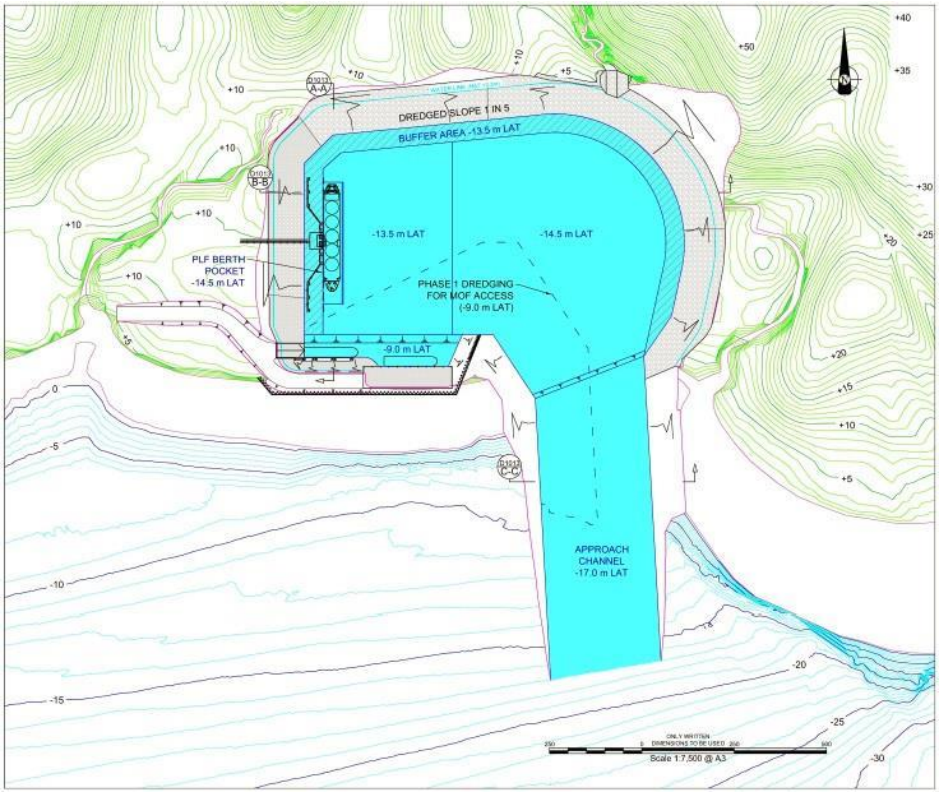

Figure 6 – Detailed Drawing of Marine Facility (LNG Port)

7. SCOPE OF WORK FOR EIA STUDY

7.1 Description of the Proposed Project

7.1.1 LNG Plant

The Beaço LNG-Plant cluster will be the area in which the natural gas pipeline reaches Timor-Leste land and where the LNG plant to process the gas will be located. The first phase of the LNG-Plant development will establish a production capacity of 5 million tonnes per annum (MTPA) or one train, which may be expanded in the future to a capacity of up-to 20 MTPA or four trains. Approximately 650 ha area is designated for LNG plant complex, which include area reserved for further expansion plan. Map of LNG plant complex with appropriate scales is shown in figure 4. The same map with higher resolution is shown in **APPENDIX 3.**

7.1.2 Marine Facility

The Marine facility is being considered as a potential export outlet for the offshore Greater Sunrise gas field. It will be used for the export of LNG and LPG where vessels will arrive in a ballast condition and leave in a laden condition. The Marine facility will also include a materials offloading facility (MOF) that comprises a roll-on/roll-off (RoRo) berth and a lift-on/lift-off (LoLo) berth. The largest LNG carrier visiting the terminal will be 216,000m^3 membrane type LNG carriers or commonly known as Q-Flex LNG Carrier (LNGC-QFlex).

The Timor-Leste LNG marine facilities will serve the Timor-Leste LNG Liquefaction Plant located onshore and will include the following components:

- Dredged channel and vessel manoeuvring area, including slope protection within harbour basin;
- Breakwater;
- Materials Offloading Facility (MOF) including Ro-Ro Quay, Lo-Lo Quay and Ro-Ro Dolphins;

- Product Loading Facility (PLF);
- Associated marine equipment.

Map of Marine Facility with appropriate scales is shown in figure 6. The same map with higher resolution is included in **APPENDIX 4**.

7.2 Description of the Environmental Conditions

7.2.1 Atmospheric Resources

7.2.1.1 Climate

A previous climate data collected from the Beaço (CSIRO, 2010) identifies that the areas has a typical tropical monsoonal climate with distinct wet and dry seasons. The daily daytime temperature was measured to be typically about 20 to 30^{o}C and the typical daily-nighttime is about 20^{o}C. The humidity is consistently high with long-term multiyear rainfall trends generally dictated by El Niño/La Niña effects and short-term annual rainfall patterns are monsoonal in nature experiencing a 7 – 9 months wet season with two peak months on December and May. It also observed that the wind with a high speed arise from offshore directions (southern arc) and wind with a low speed emanate from the landmass (northern arc) and normally blow from the north and east sides (SEIA report, 2012).

A detail study of climate will be provided in the EIS including historical data from the past and current study carried in Beaço area in 2014 (Metocean survey), which identified the rainfall frequency and rate and wind speed and directions, relative humidity, solar radiation, atmospheric pressure, and precipitation and extreme weather. The latter should cover cyclone, thunderstorms, etc.

Also, the EIS will assess the potential project impact on climate change in particular to LNG plant operation, which can result from any increase emission of greenhouse gases

(GHGs); and estimate the quantity of NO_x, VO_x, CO_2 emission based on the quantity of natural gas that is predicted to be processed in a given period of time.

The following are presentation of rainfall and temperature data recorded from the past, from 1956-1974 and 2011-2012. Other climate features such as humidity and wind speeds as well as more details of temperature and rainfall are further described in the **APPENDIX 5 (Figure 9 – 18)**.

Rainfall

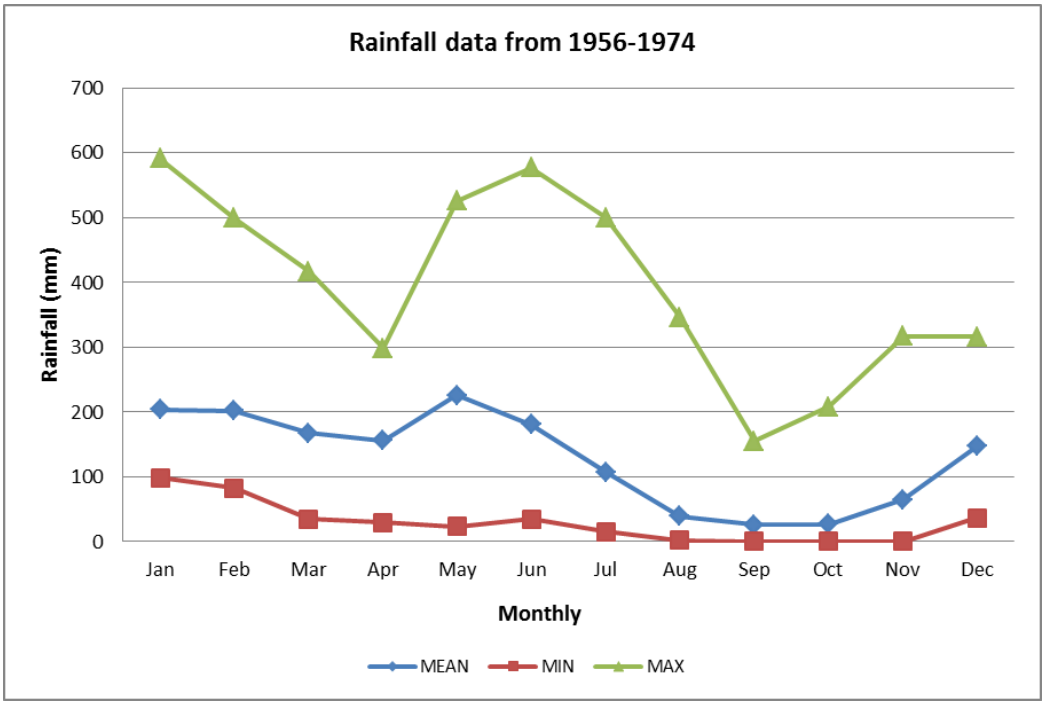

Figure 7 – Historical Data of Viqueque Rainfall Droplets Size

The maximum rainfall droplet size in the past can reach up to 600mm especially in the month of January and June, and about 300mm in December. The Minimum size of the rainfall droplets can be as small as less than 10mm especially in the month of August, September, October and November. The mean size of droplets in the past was between 200mm and 250mm, which occurred in the month of May.

Where necessary, the size of the rainfall droplets in the past will be analyzed against the recent recorded and projected of future data to identify how the proposed project

activities may affect the size of the rainfall droplets; and this analysis will be described in the EIS document.

Temperature

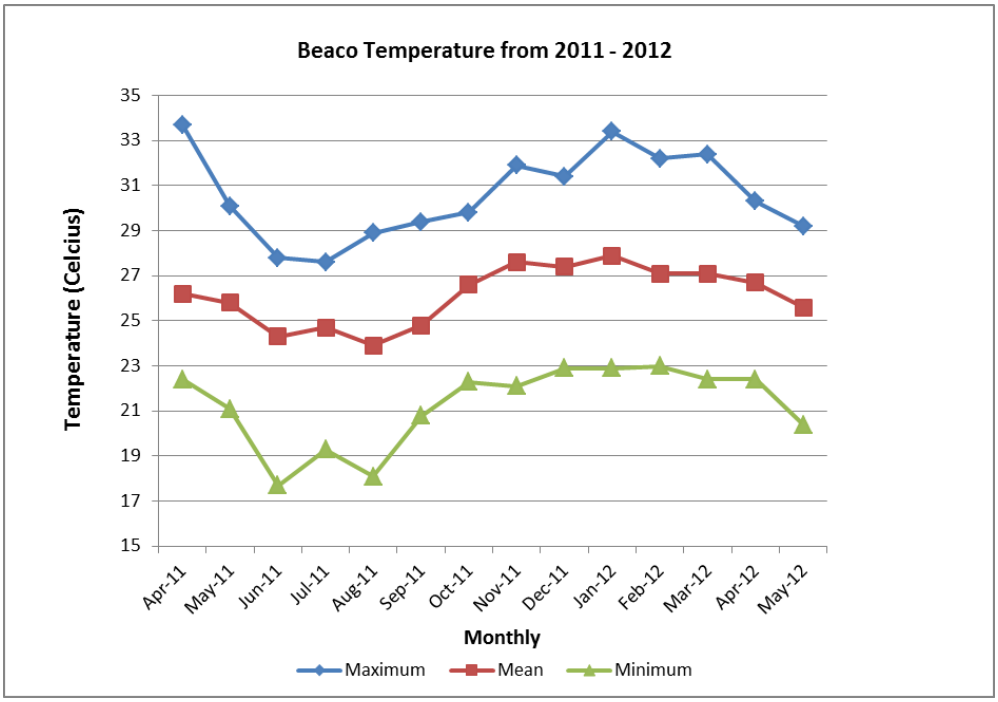

Figure 8 – Beaço Temperature Recorded from 2011 - 2012

The temperature recorded in the year of 2011 to 2012 shows that the maximum temperature in degree Celsius (°C) in Beaço was approximately 33°C, which was recorded in the month of April and January. The minimum temperature recorded was as low as 17°C, which occurred in the months of June and August. The mean temperature recorded was between about 26°C and 27°C, which mostly occurred in the months of February, March, April, October and November. More information of temperature data recorded is provided in the **Appendix 5 (Figure 9 – 18)**

The majority of cyclones in the region occur between January and March, with the severe cyclone most often occurring in the months December to April (SKM, 2001). Most of these cyclones not fully mature having an estimated wind speed of less than 80 Km/hr.

Severe cyclones with wind speed exceeding 100 Km/h occur on average, once every 2.6 years (Heyward et.al 1997).

7.2.1.2 Air Quality

Based on SEIA Report (WorleyParson, 2012), Air pollution sources from the village of Beaço are primarily associated with vegetation burning for agricultural purposes (e.g. slash and burn agricultural practice) and the burning of refuse disposal and vehicular traffic. In addition, dust generated in the Beaço region may include construction activities (e.g., maintenance of buildings, grading of roads and paths) and vehicle wheel-generated dust.

During the construction and operation of proposed project development will likely generate emissions to air and likely to affect the air quality. A study of the air quality will be conducted in order to measure the level of exposure of the dust and air pollution generated during onshore construction activities such as site preparation works, site clearance and earthworks, trenching, leveling, vehicle movement and transportation of material to the site. In particular, the dust generated during construction activities will be localized in order to reduce the dust movement beyond the project buffer zone.

A study of air quality will also be conducted to assess the emission level of gas released from flare vent, purging, and CO_2 stack into the atmosphere during the LNG plant operation.

A potential of air quality impacts associated with construction and operational phase of the LNG project development will be assessed. It is particularly to measure the level of exposure of the dust, air pollution generated by the excavation and dredging activities during the construction phase based on the size of the earthworks required. Moreover, it needs to quantify the emission level of gas released to the atmosphere during operational phase based on the concentration of natural gas to be processed in a given phase.

The study of the air quality will cover the identification of air quality sensitive receptors, collect baseline ambient air samples, assess baseline particulate ambient matter concentrations in the study area, and assess baseline ambient concentrations of

particulates gas pollutants against assessment criteria. It is also to determine the maximum allowable increase in ground-level concentration for pollutants that is likely to be emitted by the project development. In addition, where necessary, a modeling of exposure to receptor will be conducted.

7.2.1.3 Noise and Vibration

According to the noise baseline data of previous studies in the project location indicated that there would be a change of noise characteristic between construction and operational phase. Thus, a desktop study of noise generated from the LNG plant especially during operation and maintenance will be conducted to identify the noise impacts within and outside the boundary of the project location. Noise impact will be identified at the project area and neighborhood (up to 1 km), or the nearest residential areas. A profile of noise characteristic will be developed.

A technique for noise control will be evaluated, a protection for equipment will be assessed for its effectiveness of use and where necessary a model for noise attenuation with distance from the plant will be developed in order to identify the range of noise level that could be generated from the plant especially during the operation and maintenance. A report on the allowable noise level at the current project location will be provided as well as noise mitigation which will be attached to this document report.

7.2.2 Water Resources

The EIS report must include information on the quality and quantity of surface and groundwater resources as well as the quality of marine water, that can potentially be affected by the project, at different stage including construction and operation, at within and outside the project boundary.

7.2.2.1 Surface Water

It has been identified that within the project location exists three (3) small scale rivers or streams (Bularan, Benaro and Beaço) and a swamp. In addition, there is a relative big

river called Cuha which is located approximately 2 km to the west of LNG Plant Complex.

Based on SEIA Report (Worley Parson, 2012), the three (3) available water quality samples have high levels of turbidity, which is to be expected due to the high level of agriculture in the catchments. Also, the water quality is expected to vary seasonally in response to agricultural practices and rainfall. Higher pollutants loads are expected during the wet season with high levels of rainfall generating erosion and mobilizing pollutants.

More information will be collected regarding the quality, utility and detail of the surface water resources in the project location, including lagoon, lakes, stream, river and also spring water, as well as other identified surface water. This study will be done for two seasons, including dry and wet season.

In addition to this, the EIS will identify the location, size and classification of any wetland in the project area and conduct a wetland evaluation. The ecosystem value of each wetland shall be examined through on-site investigations using comprehensive valuation methodology that assesses component, functional and attribute values.

A study of the activities associated with construction and operation of the LNG plant and associated infrastructure of other project components that can affect the quality of the water within and outside the project boundary will be conducted. In water quality study, the assessment will be focusing on the suspension of sediments, discharges, spills, runoff, and waste water treatment plant discharge.

7.2.2.2 Ground Water

Based on the existing data it was identified that there are numbers of potable water from boreholes that are used by the local community for their daily consumption. A study will be conducted to identify the potential underground water resources and assess its volume to identify the amount that can be extracted to support the project activities, especially during construction and operation without reducing the water supply for the community outside the boundary of the project location. Nevertheless, according to a previous study,

it was identified that the fresh water in the project location is not sufficient to meet the project demand. Therefore, assessment needs to be undertaken including providing analysis of various alternatives for water resources to be used for the project including the use of desalinated water.

7.2.2.3 Marine Water

A study identified that suspension of sediments in the water, such as sedimentation and turbidity have the potential to affect the benthic primary producers, corals and seagrass that function as food, shelter and breeding habitats for other aquatic faunas. The suspension of sediments that can occur from the proposed project development include, rock placement for breakwater construction, land reclamation for construction of material offloading for marine facility, pile driving for construction of marine terminal, pipeline installation for discharge outlets; dredging and other in-water construction activities.

The discharges or spills may occur from construction vessel and runoff from land-based construction areas; and during operation, vessels and cargo handling are sources of runoff, discharges and spills into the marine environment. Discharges may include oily bilge, ballast water, sewage and other waste; spills may include lubricants, hydraulic oils, fuels and paints; and the site runoff would include sediment laden water.

In the waste water treatment plant discharge, it was identified that the long-term discharge pathogens, nutrients and toxicants in waste water treatment from the LNG plant discharge can affect the water quality.

Therefore, an assessment will be conducted focusing on the suspension of sediments, discharges, spills, runoff, and waste water treatment plant discharge.

7.2.3 Flora and Fauna

7.2.3.1 Terrestrial Ecology

Based on SEIA Report (Worley Parson, 2012), a study of flora and fauna in the project area have been conducted. A total of 201 species were identified from the collected

material and photographs and a species list for the Beaço development area. Similar identification was carried out for the fauna habitat in the proposed area, and it was identifying a total of 80 vertebrate fauna species that were recorded, including 2 species of amphibians, 9 species of reptiles, 59 species of birds and 10 species of mammals.

The EIS will include a desktop and detailed field survey study of the project area to identify types of flora and fauna and its habitat, which include any migratory species and endangered species. It will include mapping of vegetation in the area.

It will also identify environmentally sensitive area in proximity to the project. Environmentally sensitive areas should also include areas classified as having international, national, state, regional or local biodiversity significance, or flagged as important for their integrated biodiversity values, as well as identify its economical important.

7.2.3.2 Aquatic Ecology

A study of the aquatic environment will be conducted including the aquatic flora, fauna and marine microorganism or benthic animals in the deep water that may be affected by the project. It will include identification of any endangered and protected aquatic flora and fauna, as well as migratory fauna.

A description of any seasonal variation in the location, abundance and activities of aquatic species should be included. The marine environment study will cover the mapping of mangroves habitats, and marshes and other coastal vegetation.

7.2.4 Agriculture and Forestry Resources

7.2.4.1 Agriculture

Based on SEIA report (worleyparsons, 2012), In the Beaco LNG Plant area a single coastal mangrove community was recorded as well as two areas of riparian mangrove communities on estuarine rivers. In addition to this, secondary vegetation there is characterised by very open ‘regrowth’ forest, over grassland and introduced weed communities. This community is common in the area and results from repeated cycles of

swidden agriculture. Most trees are deciduous at the end of the wet season. Dominant trees include *borassus flabellifer*, *corypha utan*, *schleichera oleosa* and *ziziphus mauritiana*. The proposed site of the Beaco LNG Plant lies on a coastal plain largely cleared for grazing, agriculture, teak and coconut plantations. According to the census *fo fila fali* 2015, the most likely plantation found in Maluru are coconut tree and hardwood tree (±70%). The majority of the population in the area plants the agricultural crops such as cassava, sweet potatoes, corn, beans and rice for daily consumption rather than sell off to the market (approximately 77.5%).

The EIS will identify and describe agricultural resources in the study area. Specifically, it will identify agricultural operations; describe crop types, growing seasons and growing methods.

7.2.4.2 Forestry

Similar to Agriculture, the EIS will identify and describe forestry activity in the study area.

7.2.5 Geophysical Environment

7.2.5.1 Soil Quality

Based on SEIA Report (WorleyParson,2012), a soil study in the project location has been conducted and it was identified that the soil has a consistent alkaline pH values with a very low moisture; has a potential for electrical conductivity and nutrients including total organic carbon in all samples. From the study, it was recommended to have a further investigation for acid sulphate and karstic limestone that are thought to be present in the soil in the project location.

A soil specialist will conduct soil test and study to identify soil contamination by a spill of chemical and non-chemical liquid from the above ground storage tanks, water treatment waste from LNG plant, discharges from construction vessel and construction waste.

A baseline data from previous study only identified the soil condition at this current state. It was found that geomorphologically most of the coastal lowland within Maluru village is dominated by brown calcareous soils from limestone of Triasic associated with shales. There is brownish high carbonate content developed from limestone with alternate thin layers of grayish shales. They have a shallow phase where the horizon is less than 50 cm deep, generally covered by large and small limestone fragments, bare rock showing up in place.[3]

7.2.5.2 Sediment Quality

The excavated sediment approach channels of LNG jetty would be re-distributed by tidal circulation which may change the texture of the sediment of nearby areas. The dredging to excavate the channel and onshore basin would generate huge quantities of dredge spoil that may change sediment quality within the proposed project location. Hence, the sediment quality study of the project site should be conducted for texture; heavy metals, PHc (Petroleum Hydrocarbons – one of the notable contaminants found in the organic wastes) and any other pollutant serve as useful indicator of pollutant to the soil sediment.

7.2.6 Geological Environment

Based on SEIA Report (WorleyParson, 2012), Beaço development area is underlain by four different geological units including; the Bobonaro Scaly Clay Formation, the Viqueque Formation, the Baucau Limestone Formation and the Suai Formation.

At the LNG Plant site, the coastal plain is underlain by the Suai Formation, with the hills emerging to the north comprising the Baucau Limestone Formation. The limestone is; however, generally overlain by clay washed down from the higher-lying Bobonaro Scaly Clay Formation to the north.

[3]) The Soil Map of Timor Portuguese, MAP, Section 7.16, Page5

The eastern are underlain by the Bobonaro Scaly Clay Formation, whilst most of the western third is underlain by the Viqueque Formation. The lower south-western corner of this site extends onto the coastal plain, which is underlain by the Suai Formation.

7.2.7 Land and Resources Use

The land and resources uses refer to the current or future use of lands and resources available or exist within or in the surrounding neighboring of the proposed project location. The lands and resources uses such as for employment and business and public or private use. These include division of zones for the development, existing residential and outdoor recreational activities such as hunting and fishing, commercial and industrial structures activities, such as forestry, farming and livestock, existing roads and development plans. Thus, an assessment of the residential property values and its visual aesthetic will be assessed in this section. As the development of the proposed project may result in the change of the ability of landowners and public to continue to use or enjoy their lands as is currently being used or as their plan to be used in the future.

The assessment or evaluation of this study will be described in the EIS document. This includes changing in land use, forest clearance, water harvesting and the rural planning and natural areas.

7.2.8 Landscape and Visual Amenity

The expected impact of landscape and visual may arise from the project include but not limited to loss of natural landscape element such as woodland, trees, visual amenity and natural topography. During project development will involve activities that unavoidably create environmental disturbances of landscape and visual land view. A desktop review study of land visual and topography will be conducted to identify vegetation loss, visual impact of the lighting and provide an EMP of landscape and visual management system during project construction & operation. Besides, a vegetation management plan will be developed and re-vegetation strategy will also be provided.

7.2.9 Cultural Heritage

Cultural heritage impact assessments are conducted in order to reconcile development and the management and protection of historic and cultural sites. In Timor-Leste, the cultural context is often one where archaeological sites and sites of historical relevance are intrinsically related to customary practice and values.

In the particular case of Viqueque, Beaço area where the proposed LNG plant is to be established, there are some sacred sites such as sacred house *"uma lulik",* isolated grave sites, Portuguese buildings (which may possess some archaeological value), trees, and hills. Sacred houses are of particular importance to the Timorese people. Sacred houses are associated with spirituality, tradition, ancestors, self-assurance and strength for the local people. They are also the home of animist culture in Timor-Leste.

Cemeteries are located in both Maluru and Uma-Uain Craik villages. Thus, more than one cemetery was identified in the LNG site access area or proposed plot. These included graves which are actively visited and also older, unmarked graves. There is also a very old Portuguese building in front of the beach vicinity of both villages.

Interviewees in Maluru indicated that there are numerous sacred sites. The important sites mentioned by interviewees included; big tree around the sacred house (Madatuk), Kibiti tree next to the river, a hill named Macaloso and large tree called Betulari.

Three major sacred sites were mentioned by Uma-Uain Craic respondents; big rock (Fatukhun) and Tree (Ailemi Galiria) – EIA (2012).

The cultural study will be in the first place, thus, it is required to identify any archaeological and cultural significant sites which impacted by the project. It also suggests appropriate recommendations to avoid or minimize such impacts and describe the measures for managing and protecting heritages sites or areas located within the project limits or in the project area itself. These identification and investigations in the project area may be protected and eventually used to contribute to sustainable tourism and income generating activities in the region.

7.2.10 Project Waste Management

With the exception of sewage from New Towns (Nova Beaço / Nova Knua), the predominant source of all wastes will be gaseous, solid and liquid wastes from the LNG Plant and Marine Facility during project construction and operation. These wastes will largely be contaminated by hydrocarbons but, will include inorganic wastes such as mercury, incinerator ash and gaseous wastes emitted to the atmosphere from vehicle exhausts and stationary plants sources such as gas turbines. Waste Management Plan should be provided during project EMP study to provide a disposal waste management guideline to be implemented in accordance with the waste hierarchy of reduce, reuse and recycle.

7.2.11 Sosio-Economic Study

Administratively, the Viqueque Municipality is located between the Lautem Municipality to the east, Manatuto Municipality to the west and Baucau Municipality to the north. The Viqueque Municipality covers an area of 1,780 Km^2 and has a population of approximately 70,000 people (EIS Tasi Mane Project 2012). According to the final data of the Timor-Leste Food and Nutrition Survey 2013, 26.5 % of non-pregnant mothers of under-five children were iodine deficient and only 42.7 % of households nationally consumed adequately iodised salt (≥15ppm) with the highest in Viqueque district (86.8 %) and lowest in Oecussi (10.8 %) (UNICEF Report 2014). Viqueque Municipality consists of five (5) Sub-Districts or recently known as Post Administrative; Viqueque, Watu-Lari, Watucarbau Ossu and Lacluta. The majority of the population speaks Macassai and some other minority population in Beaço speaks Naueti and Tetun Terik.

The proposed development site is located near the coastal village of Maluru in the Viqueque Municipality which is approximately 200 km southeast of Dili.

Based on 2015 Population Census, the total population of Maluru was 816 people. The number of households present in Maluru is 181 household. Table 1 shows the total numbers of males, females and households in Maluru village.

Table 1 – Population Profile in Maluru

Village	Male	Female	Total	Total HH
Maluru	388	428	816	181

The age distribution of Maluru village is around 45% of the population in the 0 to 14 and 15 to 59 age groups. Around one in every ten people in Maluru Village was aged 60 or older. The socio-economic impact of the proposed project is beyond the immediate environmental impacts. This impact can affect not only the Beaço community, but also the Viqueque municipality and even the whole country could benefit from the project development. These socio-economic impacts include, creating jobs and business opportunities, improving community welfares, infrastructure and transportation development, and capacity building. Overall the expected socio-economic impact arising from the development of the LNG plant is profound for Beaço and Viqueque Municipality. The livelihood in the project area is comprised of agriculture, livestock and small scale of fishermen. The most common diseases present in Maluru and Uma-Uain Craik are Malaria, Tuberculosis, diarrhea and leprosy (EIA Tasi Mane Project 2012). Most of population in Maluro village uses wood (app. 86,7%) for cooking and water source for daily consumption is from protected well/spring (Census 2015).

A study on Socio-economic impact will be carried out during EIS to identify the potential direct and indirect impact that may arise from the project during construction, commissioning and operation. The effect of the project on the socio-economic life of the inhabitants will be examined during EIS. The community socio-economic baseline assessment will be conducted to identify the potential social economic impact that may arise from the proposed project. The socio-economic impact that can arise from the project will be analyzed and provided in the EIS including both direct and indirect benefit of project development to the Beaço local community, Viqueque Municipality and whole Timor-Leste.

7.2.12 Transportation

A study on traffic and transportation will be carried out to identify the traffic impact on the proposed project or the impact of the proposed project development that could create traffic in the surrounding road network.

7.2.13 Changes Anticipated Before the Project Commence

Presently, there is no changes anticipated at project location prior to the commencement of the project.

7.3 Analysis of Alternatives

Any alternatives to the proposed project will be provided in the EIS. It would provide information that covers the assessment and evaluation of the aspects affected by the project such as, environment, cultural, social and economic. Alternatives to be considered may include:

- Technologies and methods used for the study
- Project specification and design

The EIS will provide the rationale for using any of the alternatives mentioned.

7.4 Determination of the Potential Impacts of the Proposed Project

The EIS will identify and report related potential impacts of the proposed project on various environmental elements as described in section 6.2. It will identify unavoidable or irreversible impacts and distinguish between significant positive and negative impacts. It will also identify cumulative impacts; and global impacts including climate change impacts. These impacts will be divided into short term, medium term and long term impacts. Summary of the potential impacts at a different project phases, include pre-construction, construction, commissioning, operation and maintenance and decommissioning, will be provided in a table with sufficient description as necessary.

7.4.1 LNG Plant Complex

- Pre-Construction: land clearance, mobilization of heavy equipment and community resettlement

- Construction: mobilization of heavy equipment and structures (e.g. LNG modules), combustion emission to atmosphere, noise and vibration, light pollution, destruction of terrestrial and aquatic ecology
- Commissioning: noise generated from pressure test, power generation and compression, and diesel/oil spill that may occur during transfer from the tank to power generator
- Operation and Maintenance: gas emission from flare, vent, combustion process and incineration; noise from the LNG operational machines, disposal of hazardous and hazardous solid and liquid waste from the plant, onshore hydrocarbon spill and light pollution from the plant. Further detail of the potential impacts is presented in Table 2 below.

7.4.2 Marine Facility

- Pre-Construction: During the Pre-Construction phase, there can be resettlement of communities from the project location to the new town area such as Nova Beaço and Nova Knua and involves completion of all legal formalities from various statutory bodies, surveys/ studies required, finalization of contract for procurement of machinery/ equipment, recruitment and hiring of requisite skilled, semi-skilled manpower and labour, provision of space and other facilities such as water supply, disposal of wastewater and solid waste, on temporary basis for the contracted labour to be employed and provision for storage of machinery and materials to be used for construction.
- Construction: Loss mangroves, houses and land farms in the project location and air pollution and noise during the dredging and excavation
- Operation and Maintenance: Operation phase shall mainly comprise of dredging at regular interval to maintain required water depths, air pollution, water pollution and other pollution that may arise from the loading and unloading of products.

7.5 Overall Summary of the Potential Impacts and Possible Mitigations

This section will summarize the overall identified project potential impacts and list out their possible mitigations in table format. It is worth noting that this list is not exhaustive in nature, hence, the EIA Consultant is expected to verify and confirm this list. In addition, the Consultant is also to populate the list with various impacts that may have not been captured in this table based on the activities during the construction and operation of LNG plant and Marine Facility in Beaço.

Table 2 – Potential impacts of LNG plant and Marine Facility components

POTENTIAL IMPACT	PROJECT PHASE				
	Pre-Construction	**Construction**	**Commissioning**	**Operation and maintenance**	**Decommissioning**
Climate	✓	✓	✓	✓	✓
Air Quality	✓	✓	✓	✓	✓
Water Quality	✓	✓	✓	✓	✓
Soil quality	✓	✓	✓	✓	✓
Noise	✓	✓	✓	✓	✓
Aquatic Ecology	✓	✓	✓	✓	✓
Cultural Heritage	✓				
Socio-Economic	✓	✓	✓	✓	✓

The information provided in the Table 3 below is preliminary in nature. The consultant is required to validate and identify further impacts and corresponding mitigation measure including activities required for each project phase.

Table 3 - List of Possible Mitigation of LNG plant and Marine Facility Components

Project Phase	Activities	Potential Impacts on	Potential Mitigation
LNG Plant			
Pre-Construction & Construction	Land Clearance and leveling	• Soil erosion • Reduction of Soil Minerals • Loss of habitants (Flora & Fauna) • Human health (particles intake) from dust generation • Visibility Reduction • Contamination of water column or sediment • Noise and vibration • Air pollution	• Geotechnical Investigation • Laboratory Soil Test • Detailed Soil Erosion Plan • Dust suppression Plan
	Operation of Heavy Machinery – Combustion emissions to air	• Air Pollution • Greenhouse Gases • Human Health • Acid Rain • Climate – CO_2 generation	• Air Quality test and quality control • Dust suppression plan • Traffic Management Plan • BAT Assessment/Carbon reduction plan to assess and reduce CO2 generation
	Lighting of site for safe construction activities and security	• Habitats change • Behaviour and reproduction of terrestrial flora and fauna and marine species	• Lighting map/plan for construction and operation to minimize the disturbances
	Construction and Installation of Equipment	Noise and Vibration	• Site plan and details for construction management showing the layout of noise should be given
	Site preparation/ footprint for construction (laydown) and operations	Sea Use (terrestrial hydrogeology/ runoff/ surface water drainage) and potential change to habitat balance depending on species dependence on water: • Effect on marine flora and fauna • Conflict with other users	EIA – hydrological assessment to understand surface flows and dependence of habitats/groundwater reservoirs replenishment
	Liquid Discharge	Fauna Disturbance – reduction on the population of invertebrate's species that support the food	Drainage system design plan/discharge points should be located for both hazardous and non-

		chain. • Direct disturbance to spawning habitat • Disruption to migratory behavior of adult fish. • Damage to spawning grounds • Disruption to fishing grounds • Damage to benthic communities • Change in water chemistry	hazardous waste
	Onshore, offshore & coastal construction - heavy civil works and management of water runoff and soil compaction/ soil horizon protection.	• Coastline soil disturbance • Changes in soil structure • Reduction of the soil fertility • Habitat change	EIA study to ascertain how tolerant / sensitive the coastline habitat is to disturbance from different project options and stages, to propose less disruptive methods and mitigation measures to control the risk to the coast taking into account any nearby users of the coast
	Saline discharge from reverse osmosis	• Fauna Disturbance	Emissions saline plume modeling to water resources and soil
	General	• Direct effects on the population of native species due to the introduction of competitive species or diseases • Contamination of groundwater/marine environment with fine sediment due to surface water run-off • Pollution to air/soil/surface groundwater from waste generation	• List out and map the population of native species • Plan for sediment traps in vulnerable areas • Waste study to be conducted
	Socio-Economic Impact	• Community Resettlement • Damage to sites and artifacts • Job Opportunities • Trans-culture • Road Congestion	• Archeological assessment – constraints maps, traffic/route selection • Traffic management study
Commissioning	• Pipeline Pressure test. • Pneumatic testing - land required for (diesel driven)	• Noise, • Atmospheric emissions, • Diesel spillages, • Camp accommodation.	• Similar to pre-construction and construction

	compression, power generation, etc.		
	Pipeline start-up and purging	• Emission to air	
	Plant and tanks hydro testing	Discharge of chemical treated water	• Discharge point to be located
Operation & Maintenance	Release of LNG from storage tank, i.e. LNG leakage and spillage	• Emission to water / soils	• Fire and Gas mapping • Safety distance layout
	Heavy machines/ vehicles/ diesel generator sets – Combustion Processes, Flare, Vent, Waste Water Treatment	• Climate Change – NOx, VOC, BTEX, CO_2, H_2S waste gas contributing to greenhouse effect • Odor • Bird killed	
	Waste Water Treatment, Shipping	• Liquid Effluent Discharges (water pollution): Oils, Catalyst, Sanitary, Lube Oils, Mercury, brine, storm water • Hydrocarbon Spill	
	Process Plant, Filters, Utilities	Disposal of Solid waste: contamination of soils, surface water and ground water.	
	Pressure Test, Pneumatic Test, Compression, Power Generation, etc.	Noise Disturbances to local community	Site plan and details for operation and maintenance management showing the layout of noise and dust barriers should be given
	Onshore Hydrocarbon Spill	• Fire and/or Explosion • Potential contamination to soils, water and groundwater	
	Light Pollution	Disturbance to Fauna and Marine Species	
Marine Facility			
Pre-Construction & Construction	Community resettlement	• Cultural and social economic • Land dispute • Plantation, fisheries and agriculture activities • Houses and land farms	• Public consultation on planning and decision making • Compensation for the new resettlement area • Reforestation
	Land Clearance	• Soil erosion	• Geotechnical Investigation

		• Reduction of Soil Minerals • Loss of habitants (Flora & Fauna) • Human health (particles intake) from dust generation • Visibility Reduction • Contamination of water column or sediment	• Laboratory Soil Test • Detail of Soil Erosion Plan • Dust suppression Plan
	Operation of Heavy Machinery – dredging and excavation	• Air Pollution • Dust • Human Health • Marine ecology • Noise	• Air Quality test • Dust suppression plan • Slow speed of dredgers • Noise barrier • Traffic Management Plan
	Lighting of site for safe construction activities and security	• Habitats change • Behavior and reproduction of terrestrial flora and fauna and marine species	• Lighting map/plan for construction and operation to minimize the disturbances
	Construction and Installation of Equipment	Noise and Vibration	• Site plan and details for construction management showing the layout of noise should be given
	Onshore, offshore & coastal construction - heavy civil works and management of water runoff and soil compaction/ soil horizon protection.	• Coastline soil disturbance • Changes in soil structure • Reduction of the soil fertility • Habitat change	EIA study to ascertain how tolerant / sensitive the coastline habitat is to disturbance from different project options and stages, to propose less disruptive methods and mitigation measures to control the risk to the coast taking into account any nearby users of the coast
	General	• Direct effects on the population of native species due to the introduction of competitive species or diseases • Contamination of groundwater/marine environment with fine sediment due to surface water run-off • Pollution to air/soil/surface groundwater from waste generation	• List out and map the population of native species • Plan for sediment traps in vulnerable areas • Waste study to be conducted
	Socio-Economic Impact	• Community Resettlement	• Archeological assessment – constraints maps,

		• Damage to sites and artifacts • Job Opportunities • Trans-culture • Road Congestion	traffic/route selection • Traffic management study
Operation & Maintenance	Release of LNG during Loading activity from LNG storage to LNG tanker i.e. LNG leakage and spillage	• Environmental pollution to air, water (marine ecology), soil • Reputational damage	Fire and gas detection Safety distances Layout/ plot plan
	Regular maintenance dredging	• Air Pollution • Dust • Human Health • Marine ecology • Noise	• Air Quality test • Dust suppression plan • Slow speed of dredgers • Noise barrier • Traffic Management Plan
	Marine growth	• Corrosion • Structural failure	• Coatings • Regular maintenance

.

7.6 Assessment and Evaluation

The adverse impact due to the proposed project should be assessed and effective mitigation steps to abate these impacts should be described. In the EIS, criteria and methods will be developed for evaluating or assessing the environmental impacts for each components as mentioned in Section 7.2 and at each phase of the proposed project, include pre-construction, construction, commissioning, operation and maintenance and, if applicable, decommissioning.

The methods and criteria used should be clearly described in the EIS. The impacts should be evaluated in terms of their local, regional, national and international importance, and the impacts should be assessed in terms of the magnitude, significance, frequency of occurrence, duration and probability. A summary table showing the impact and their rating should be provided.

In addition, the EIS will also describe all possible measures that will be taken to avoid or mitigate the identified negative impacts and maximize the identified positive impacts of the projects. Mitigation includes the elimination, reduction or control of the significant impacts and may include restitution for any damage. These will be described in more details in the EIS and EMP

Criteria and methods will also be included to assess the impact of the proposed alternatives to the project. Alternative is discussed in Section 7.3.

Also, as mentioned in the Section 4 (Legal Requirements), it is expected that the EIS and EMPs should follow criteria typically required by international standards such as the World Bank and IFC.

7.7 Environmental Management Plan

The EMP will be a separate document that will be used as a guide to provide descriptive mitigation or measures for the environmental and social impacts of the proposed project. It will identify the feasible and cost-effective measures to prevent or reduce significant impacts to an acceptable level, and identify actions that may be needed to implement the

identified measures at each phase of the proposed project. The EMP will also describe detail monitoring programs for monitoring the implementation of the identified mitigation measures.

The EMP will also identify measure for controlling and responding to any emergency situation that may occur at different stage of the proposed project.

7.8 Public Consultation

The public consultation will be conducted in the preparation of scoping for the EIS & EMP study and preparing the EIS & EMP documents. The public consultation is conducted to obtain public opinion on the implication of the proposed project. The public consultation will be conducted in the project affected area or location; and will invite the local community in the project location, relevant local and national NGOs, government officials, local authority, women and vulnerable groups.

7.8.1 Identified Stakeholders

The following is the list of stakeholders and community to be involved in the public consultation:

- Local community: Maluru Village (aldeia; Loho-oan, Maluru, Makaloso, Makaliku and Kailoibere).
- Local Authority: Chief of Village, Administrator of Viqueque municipality, Administrator of Posto Administrativo Viqueque Vila, PNTL commander, and other relevant local authorities
- Local NGOs involved actively in environmental program
- Local government: relevant local government in Viqueque municipality
- National government: MP[4], VMDpHOA[5], Agriculture & Forestry and other relevant government institution.
- Donors, Academic, trade association, woman and vulnerable groups

[4] MP : Ministerio do Petroleo
[5] VMDpHOA : Vice Ministro Desemvolvemento para Habitação, Ordenamento e Ambiental

7.8.2 Mechanism for Public Consultation

The public consultation will be conducted during the preparation of scoping for the EIS & EMP study and preparing the EIS & EMP documents. The public consultation is conducted to obtain the public opinion on the implication of the proposed project. The public consultation will be conducted in the project affected area or location; and will invite the local community in the project location, relevant local and national NGOs, government officials, local authority, women and vulnerable groups.

The public consultation will be made public through media available in the Viqueque region and in the country. The notices of the environmental licensing process will be advertised on local television, radio and newspapers as well posted on the public facility that is reachable to the local community such as church, local school and local village administration office.

Records of the public consultation will be attached in the EIS document, these include detail of parties and stakeholder consulted, mechanism of consultation, public comments and opinions, and other issues or information that raise during the public consultation.

7.8.3 Public Meeting

In regard to the project preparation and engagement with the stakeholders, the public and the affected community, TIMOR GAP has carried several initial engagement meetings with these groups in Beaço, Viqueque. The objective of the initial engagement was to introduce the project plans, features and the changes or impacts of the proposed project development on the community and its village.

The first initial meeting was carried out in the early year of 2009, which was just basic introduction on the general plan of project to the community, including studies that needed to be done before the actual project development activities take place in the area. The second initial meeting was then conducted on 21 January 2013. In the second meeting, TIMOR GAP brought in information of the project description and its components, such as pipeline, LNG plant, marine facility and new towns; also the study

results that have been conducted in the area, the studies conducted include Pre-FEED study for pipeline and FEED study results for Marine Facility.

The third meeting was conducted in February 2016. The objective of this engagement is to inform the community regarding the first phase of the project development, which is preliminary land identification and mapping of the new towns area. In this engagement the affected communities were in agreement with the proposed. The next public or local community engagement will be held upon the process of EIS & EMP study for obtaining the environmental license for the proposed project location.

In addition to the three meetings mentioned above, there have been active engagements between TIMOR GAP, E.P. and the local community from time-to-time, such as monitoring English course by SOLS, which organized by the Ministry of Petroleum and Resources Minerals (MPRM) and providing support and assistance to the English course activities, and resettlement meeting with the affected community.

8. STATEMENT OF FLEXIBILITY

In the implementation of the study from collecting and analyzing environmental, social and economic baseline data and information, including potential impacts, mitigation, alternative analysis, environmental management plan and policy, study methodologies and technologies, and scope of work for the EIS & EMP study of the proposed project, certain components within the Term of Reference of proposed project may change.

Therefore, the proponent requests to maintain the right to make change or modification to the proposed Terms of Reference in the preparation of the EIS/EMP. This is with the view to deliver a more comprehensible and meaningful study. A consultation with the Environmental Authority would be conducted prior to any changes or modification being made to the proposed project; and it would be documented in the EIS/EMP.

APPENDIX 1 – MAP OF LNG PROJECT COMPONENTS

APPENDIX 2 – AREA DESIGNATED FOR LNG PLANT

APPENDIX 3 – LNG PLANT OVERALL LAYOUT

APPENDIX 4 – DETAIL DRAWING OF MARINE FACILITY (LNG PORT)

APPENDIX 5 – DATA ON CLIMATE

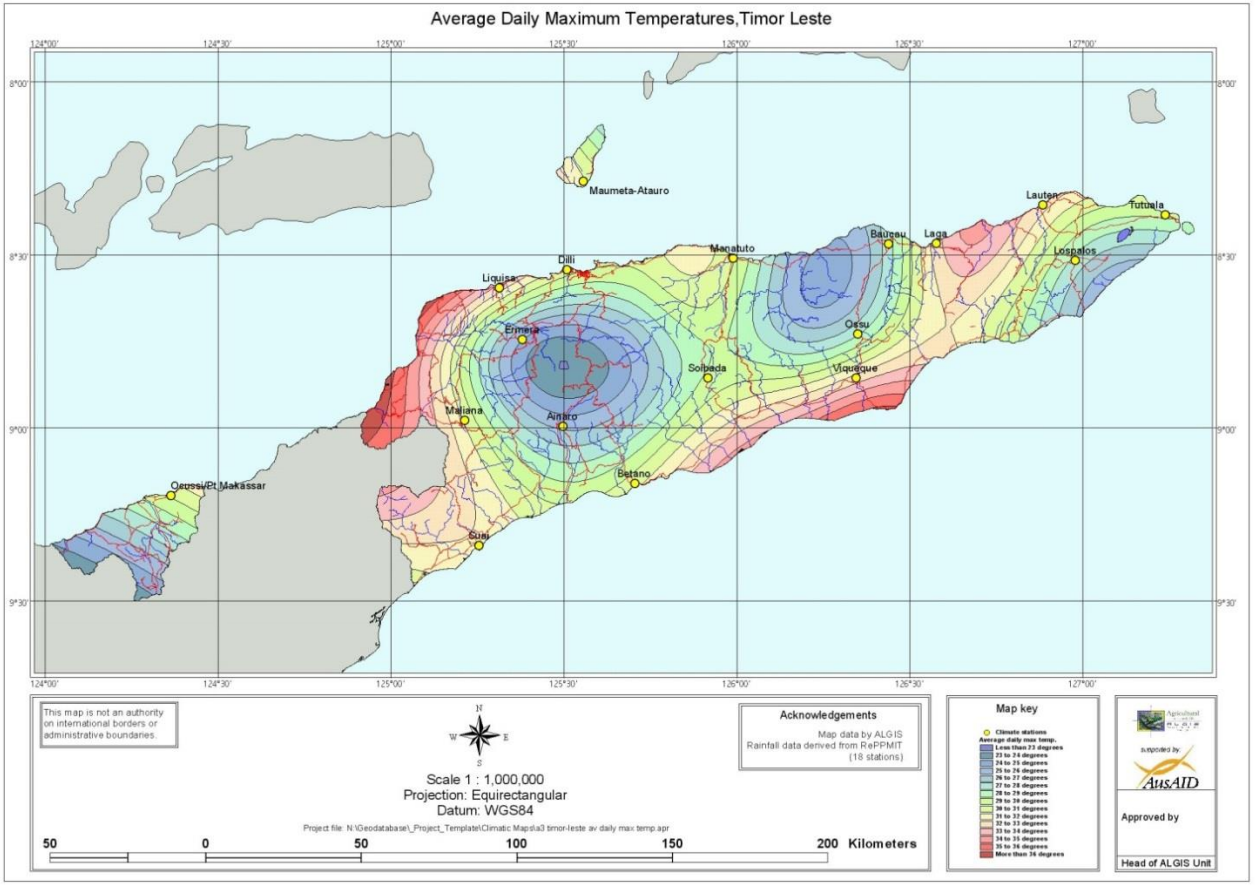

Figure 9- Daily Maximum Temperature of Timor-Leste

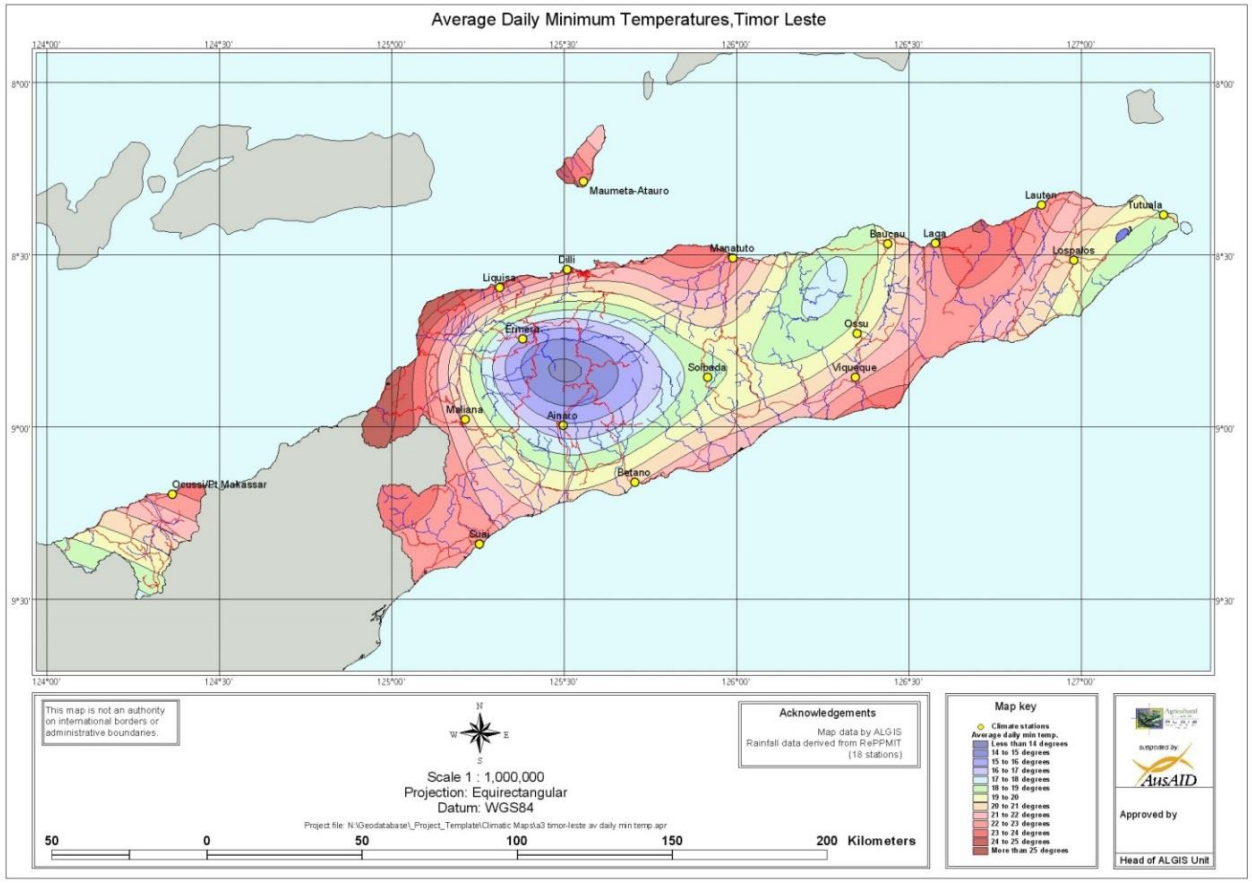

Figure 10 - Daily Minimum Temperature of Timor-Leste

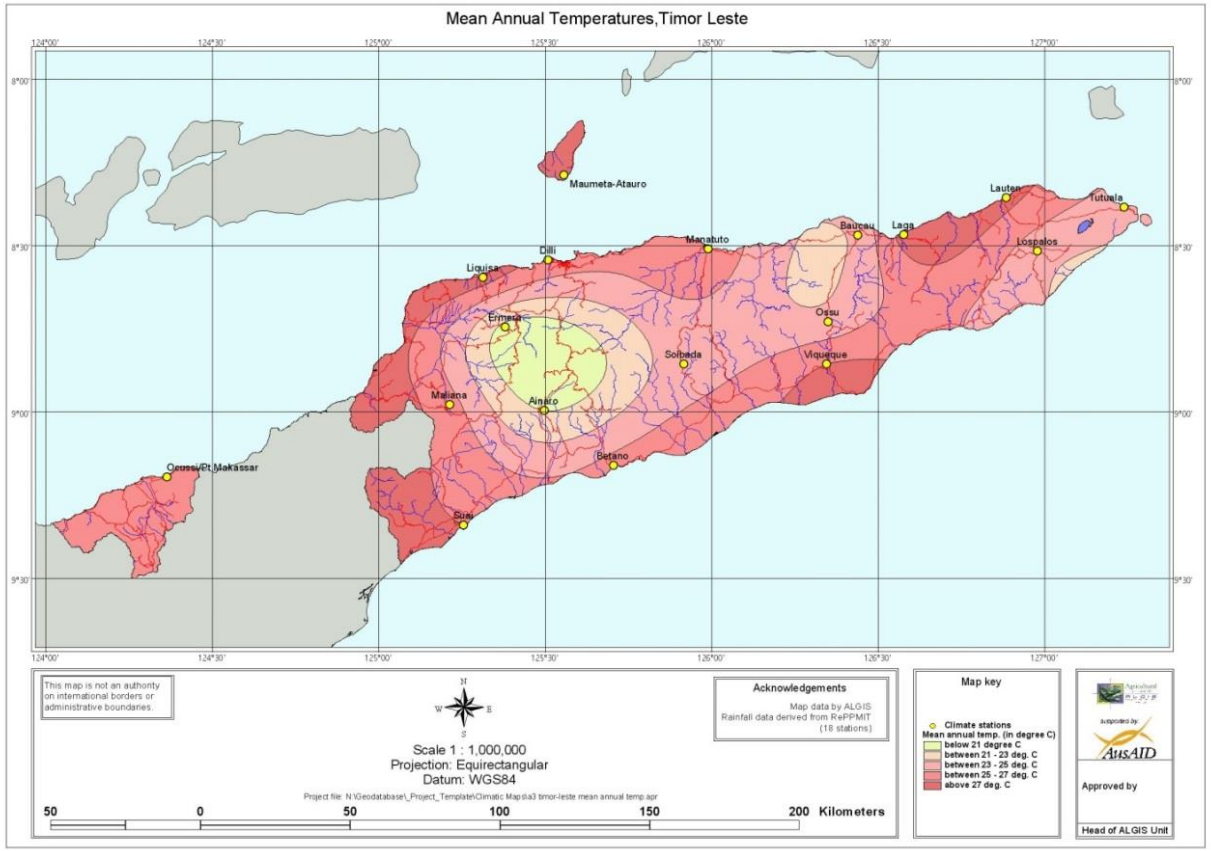

Figure 11 - Mean annual Temperature of Timor-Leste

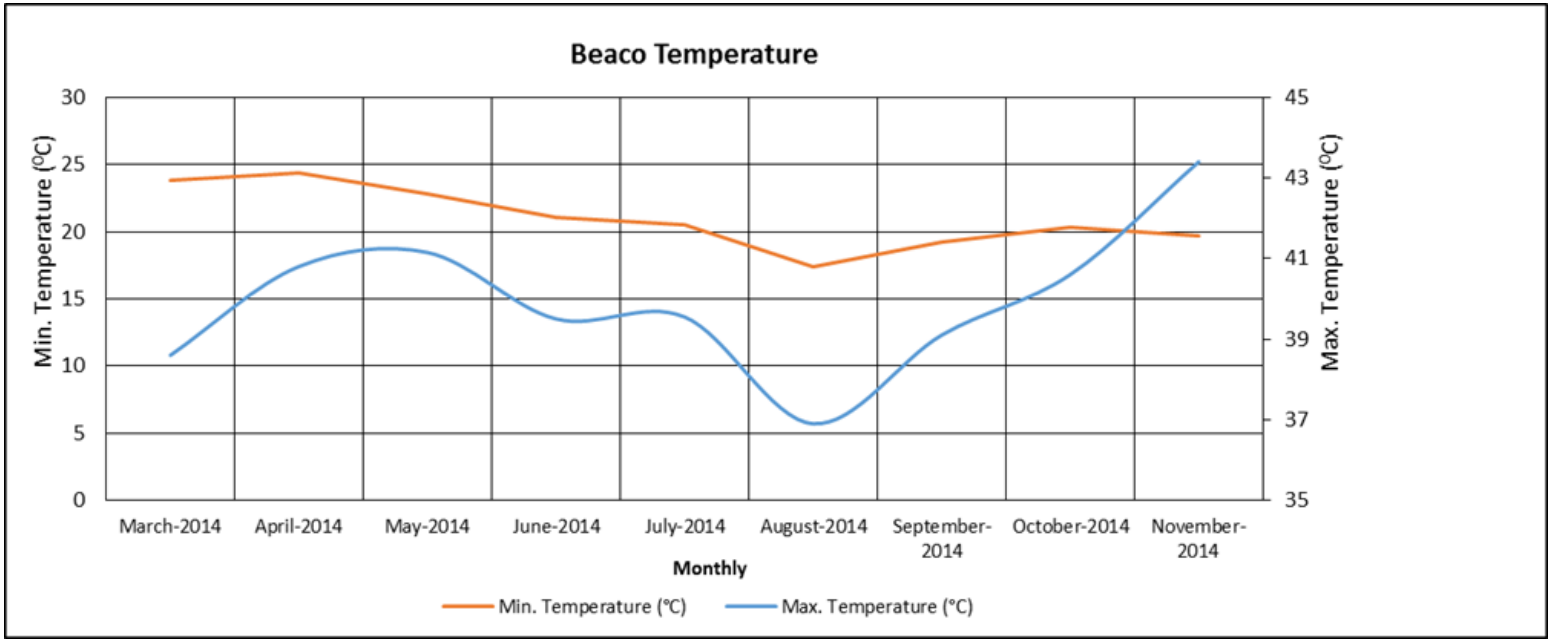

Figure 12 - Monthly Minimum and Maximum Temperature of Beaço

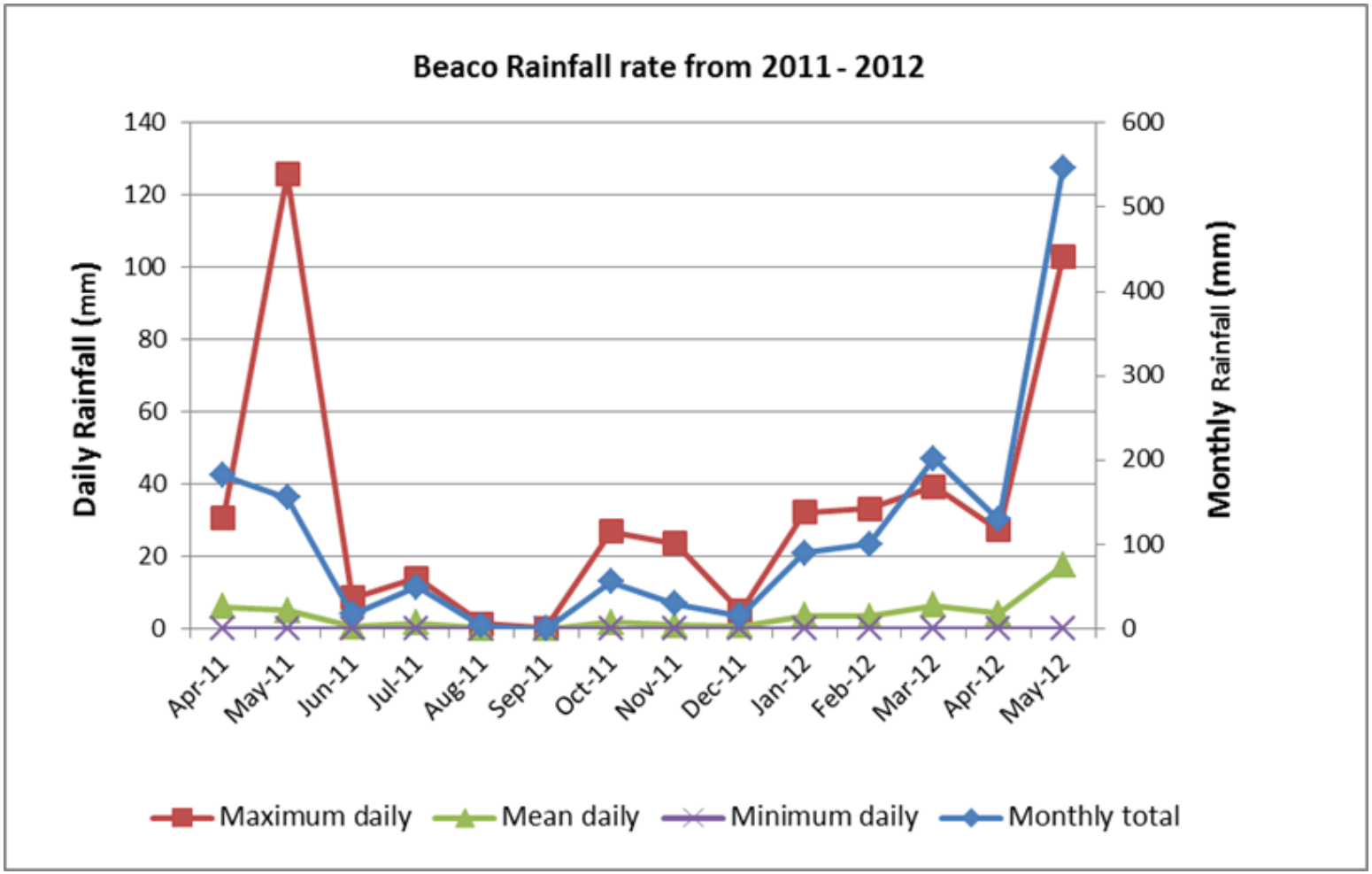

Figure 13 - Beaço rainfall droplets size

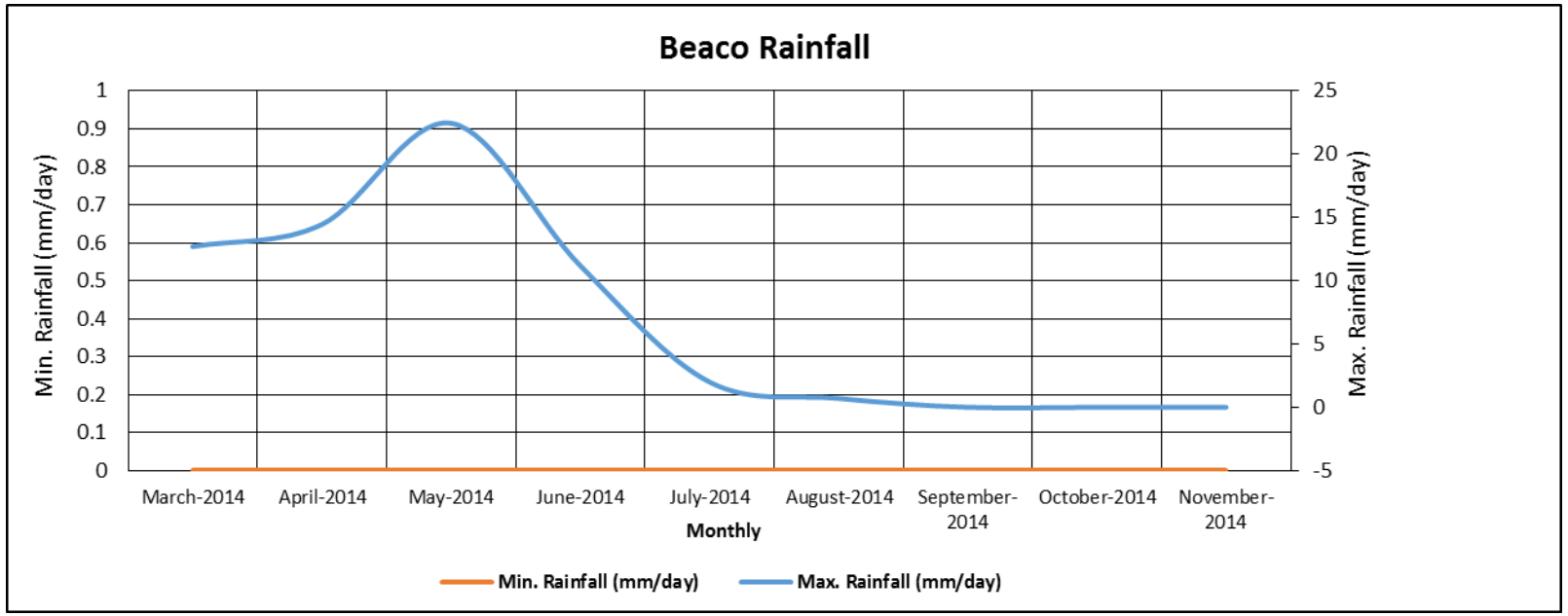

Figure 14 - Maximum and Minimum of Beaço Rainfall Rate

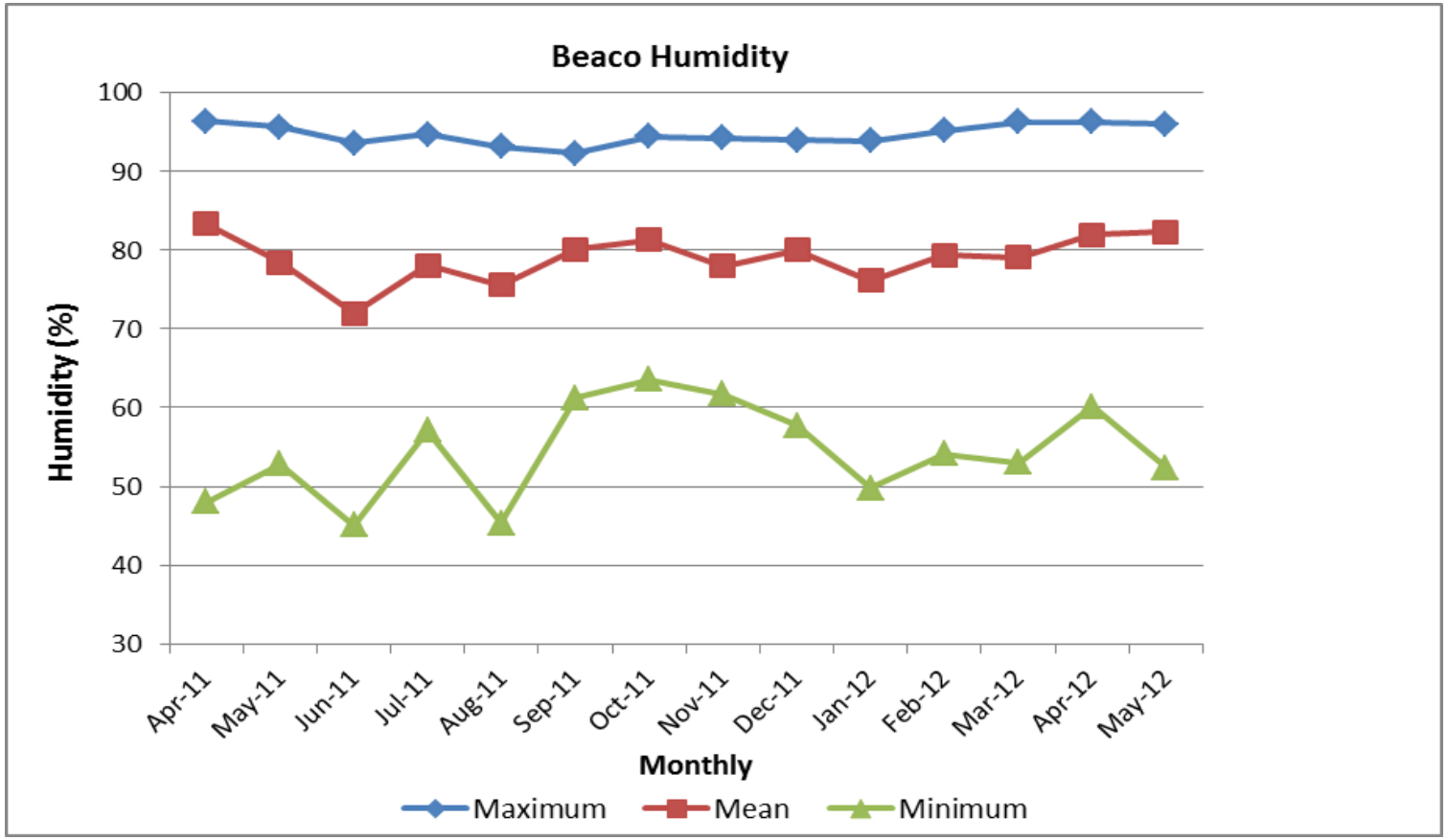

Figure 15- Humidity Level in Beaço

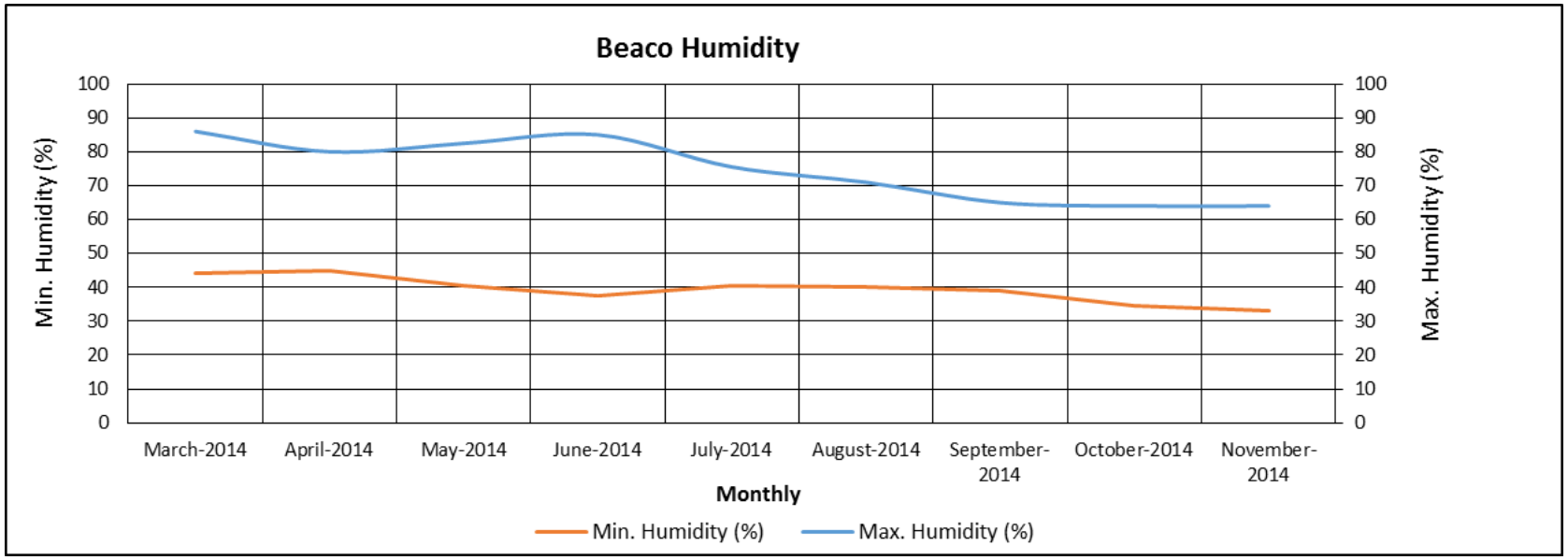

Figure 16- Maximum and Minimum Percentage of Humidity Level in Beaço

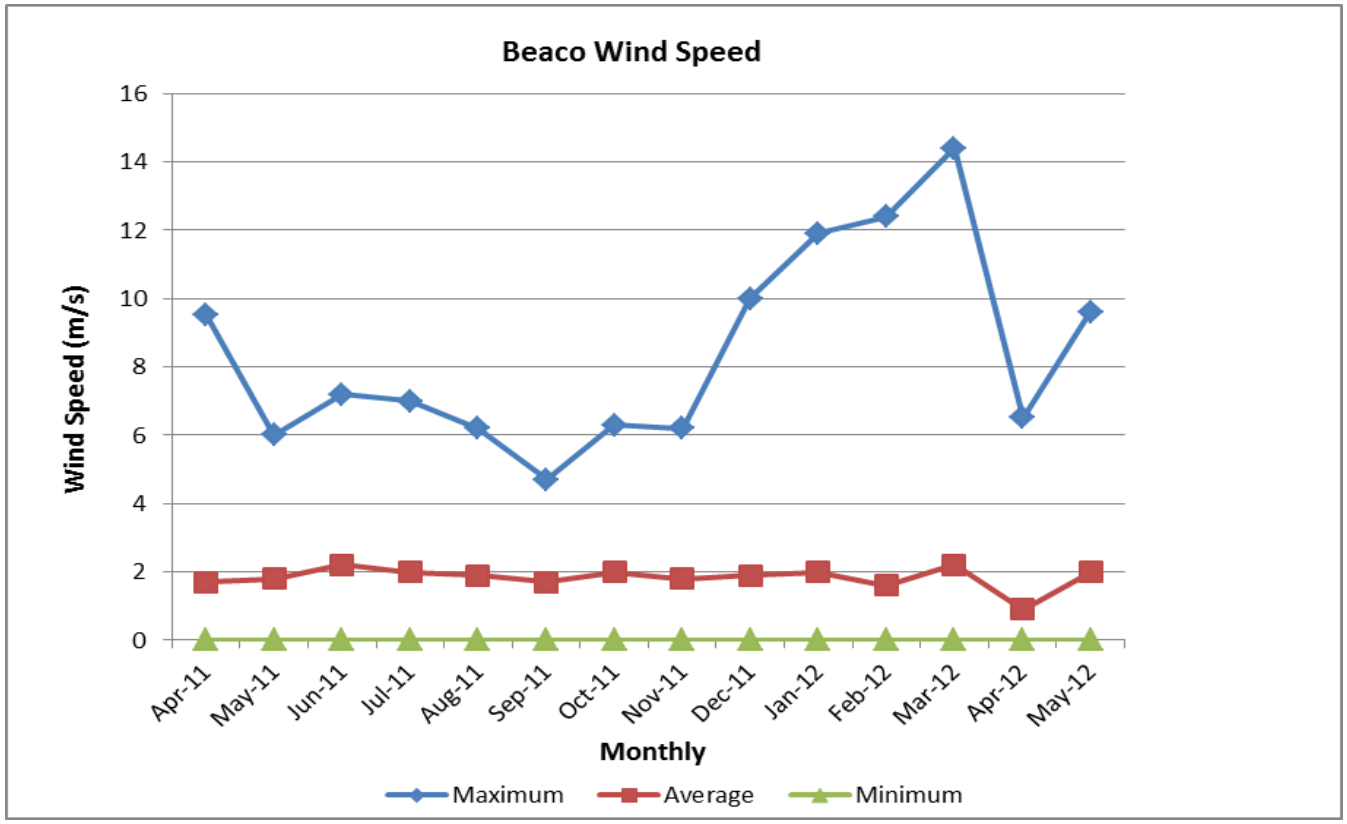

Figure 17 - Beaço Wind Speed From 2011-2012

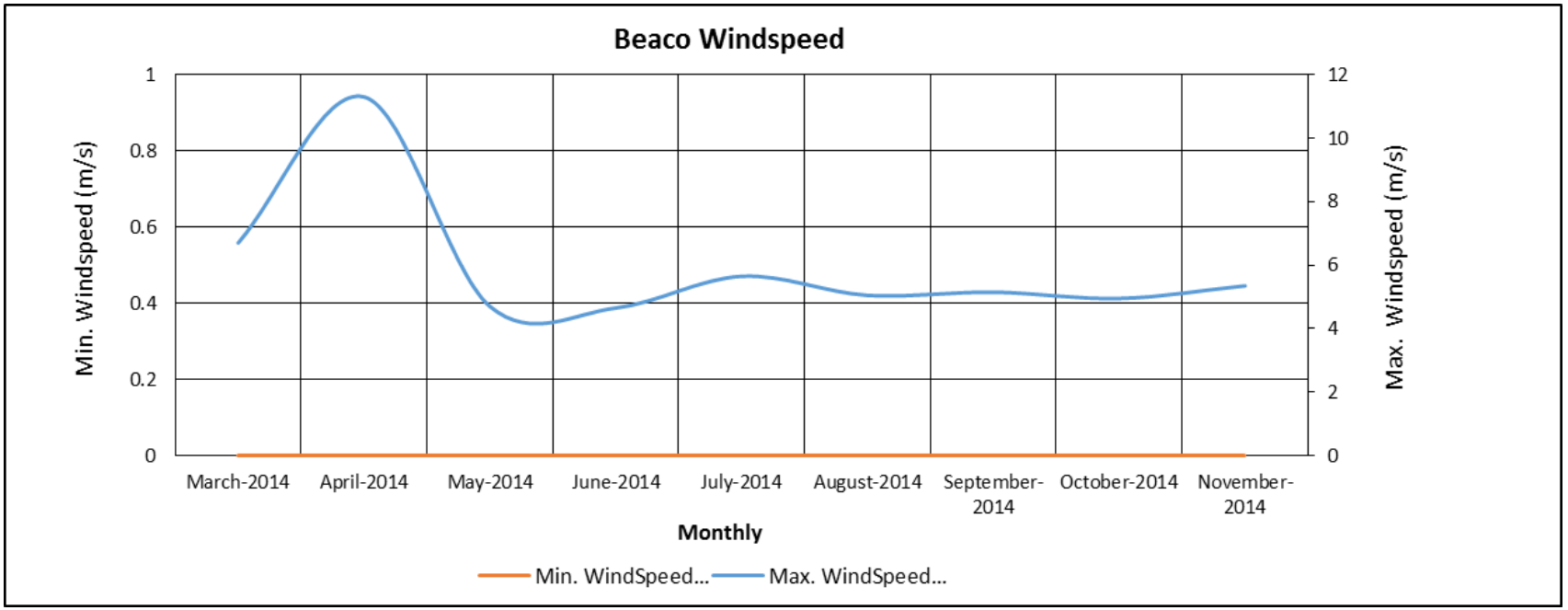

Figure 18- Beaço Wind Speed Recorded in 2014