TERMS OF REFERENCE (TOR)
DRILLING ACTIVITY
PSC TL-OT-17-09

under

Decree Law No.5/2011 Environmental Licensing

TR-HSE-TOR-002

AUTHORISATION		
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REVISIONS			
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1	22/09/2020	AB/JS	Final for submission
2			
3			

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ABBREVIATIONS

ADB	Asian Development Bank
AIA	Assessment Impacto Ambiental
ALARP	As Low as Reasonably Practicable
ANPM	Autoridade Nacional do Petróleo e Minerais
AOI	Area of Interest
API	American Petroleum Institute
AQG	Air Quality Guidelines
BHA	Bottom Hole Assembly
BOD	Basis of Well Design
BOE/d	Barrel of Oil Equivalent per day
BOP	Blowout Preventer
DWOP	Drill Well on Paper
EC	Evaluation Committee
ED	Eastern Drilling
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GoTL	Government of Timor Leste
HDPE	High Density Polyethylene
HSE	Health, Safety & Environment
IADC	International Association of Drilling Contractors
IBA	Important Bird Area
IFC	International Finance Cooperation
OIGP	International Association of Oil and Gas Procedures
IUCN	International Union for Conservation of Nature
LNG	Liquid Natural Gas
MDG	Millennium Development Goals
NADF	Non-Aqueous Drilling Fluid
OSCP	Oil Spill Contingency Plan
PA	Post Administrative
PD	Project Document
PSC	Production Sharing Contract
SOP	Standard Operating Procedure
TD	Total Depth
TG	Timor Gap
TL	Timor Leste
TOR	Term of Reference
TR	Timor Resources
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organisation

Non-Technical Summary - English

Timor Resources proposes to drill an exploration well as follow up to the 2019 seismic acquisition programme in one location located at or near Post Administrative Hatu-Udo, Ainaro Municipality. Timor Resources also proposes an alternative location in case the first well is undrillable; the second well is located at the Post Administrative of Alas, the well locations are shown in Figure 1 and named as follows:

1. “Rusa Well” – Suco Foho – Ai- Lico
2. “Kameli Well” Suco Uma Berloic

Each well will occupy a site of 1 hectare during the drilling operation, for a period of approximately 2 months. In the case of an unsuccessful well the site will be rehabilitated to its original condition or handed over to an agreed after-use. In the case of success, the well will be suspended pending further appraisal.

The drilling operations will be conducted on a 24-hour, 7 day a week basis. Driving and non-essential operations will be restricted to daylight hours as much as possible. Dust and Noise will be monitored and kept within the allowable limits as set by ANPM.

Timor Resources will minimise the impact on the neighbouring communities and environment as much as is reasonably possible. Public consultations will be conducted in concert with the authorities and any concerns that are raised by the public will be considered and a mutually acceptable solution will be sought.

Timor Resources will employ crews from the local area as much as possible, providing that they have appropriate qualifications for the position and are medically fit for the work.

Non-Technical Summary - Tetum

Timor Resources propoen atu fura posu exploratoriu hanesan kontinuasaun ba programa akuizisaun seismico 2019 nian iha fatin ida besik Posto Administrative Hatu-Udo, Municipio Ainaro. Timor Resources mos propoen lokalidade alternativa ida se karik posu primeiru ne'e la konsege fura; posu Segundo lokalizada iha Posto Administrativu Alas, lokalidades ba posu sira ne'e hanesan hatudu iha Figura 1 no ho naran hanesan tuir mai:

1. "Rusa Well" – Suco Foho – Ai- Lico
2. "Kameli Well" Suco Uma Berloic

Kada posu ida sei presija fatin ho luan hektar ida (1) durante hala'o perfurasaun, ba tempu mais ou menus fulan 2. Wainhira la hetan mina fatin refere sei rehabilita ka restaura fila fali ba ninia kondisaun original no entrega fali ba nain tuir akordu ne'ebé iha. Wainhira suksesu ka hetan mina, posu ne'e sei suspende temporariamente hodi halo evaluasaun klean liu tan.

Perfurasaun sei hala'o iha 24 oras nia laran, loron 7 iha semana ida nia laran. Movimentu kareta no servisu/operasaun la importante sira sei limita de'it durante tempu loron-matan nian wainhira posivel. Rai rahun no barullu sei monitoriza no sei lao tuir limitasaun ne'ebe autoriza ona hanesan hatur iha ANPM nia regulamentu.

Timor Resources sei minimiza impaktu ba komunidade ne'ebé hela besik no ambiente wainhira posivel tuir padraun industria nian. Konsulta Publika sei hala'o ho ko'ordenasaun hamutuk ho autoridades sira no kualker preokupasaun ruma ne'ebé levanta husi públiku sei konsidera no sei buka solusaun ida ne'ebé iha konkordansia mutual ka hamutuk.

Timor Resources sei uza pesoal sira husi area lokal ho numeru barak wainhira posivel, naran katak sira iha kualifikasaun ne'ebe apropriadu ba pozisaun ne'e no saude diak hodi servisu.

1 INTRODUCTION

Timor Resources, a company registered in Timor-Leste under TIN 20032094, and Timor Gap the National Oil Company of Timor-Leste entered into Production Sharing Contract PSC TL-OT-17-09 for petroleum operations on the 7th April 2017. The Contract made under the Law No.13/2005 enables exploration activities to be carried out for the purpose of development and exploitation of Petroleum in the Contract Area. Timor Resources (TR) is the Operator and on behalf of the Contractor group seeks to carry out exploration drilling in good oil field practice. The Contract Area defined by PSC TL-OT-17-09 is an area that covers 1,291 km^2, including 1,002.4 km^2 onshore extending along the coastline for approximately 52 km and up to 30km inland, and 288.6 km^2 of the near offshore for an average distance of 6km from the coastline (Figure 1)

Based on article 5 (defining project scope) chapter III environmental assessment information phase under Decree Law No.5/2011 Environmental Licensing and ANPM decision on category for drilling project in PSC TL-OT-17-09 ANPM/HSE/S/18/228 dated 27th December 2018, the proposed Term of Reference (TOR) for the project that falls in Category A is a requirement to set complementary legislation. The scoping phase shall establish the framework of activities and impacts that will require further investigation during the environmental impact assessment study for Category A proposed projects. The structure of this TOR follows the structure as set out in the Annex III of the Ministerial Diploma No.46/2017 of 2nd of August regarding the minimum requirements for the TOR of Category A projects.

The aim of the TOR is to outline the process and structure for conducting Environmental Impact Assessment (EIA). The TOR sets the objectives, defines the scope of study, methods and schedule for EIA processes. For drilling activities taking place in PSC TL-OT-17-09, the following list represents the scoping phases TR expects to address prior to, during and after project execution (post project monitoring program). With “continual improvement” in view and formal Risk assessment pending, the list below may not be all inclusive as other environmental aspects, impacts and issues may be realized and require time focus and/or action at phase of the project.

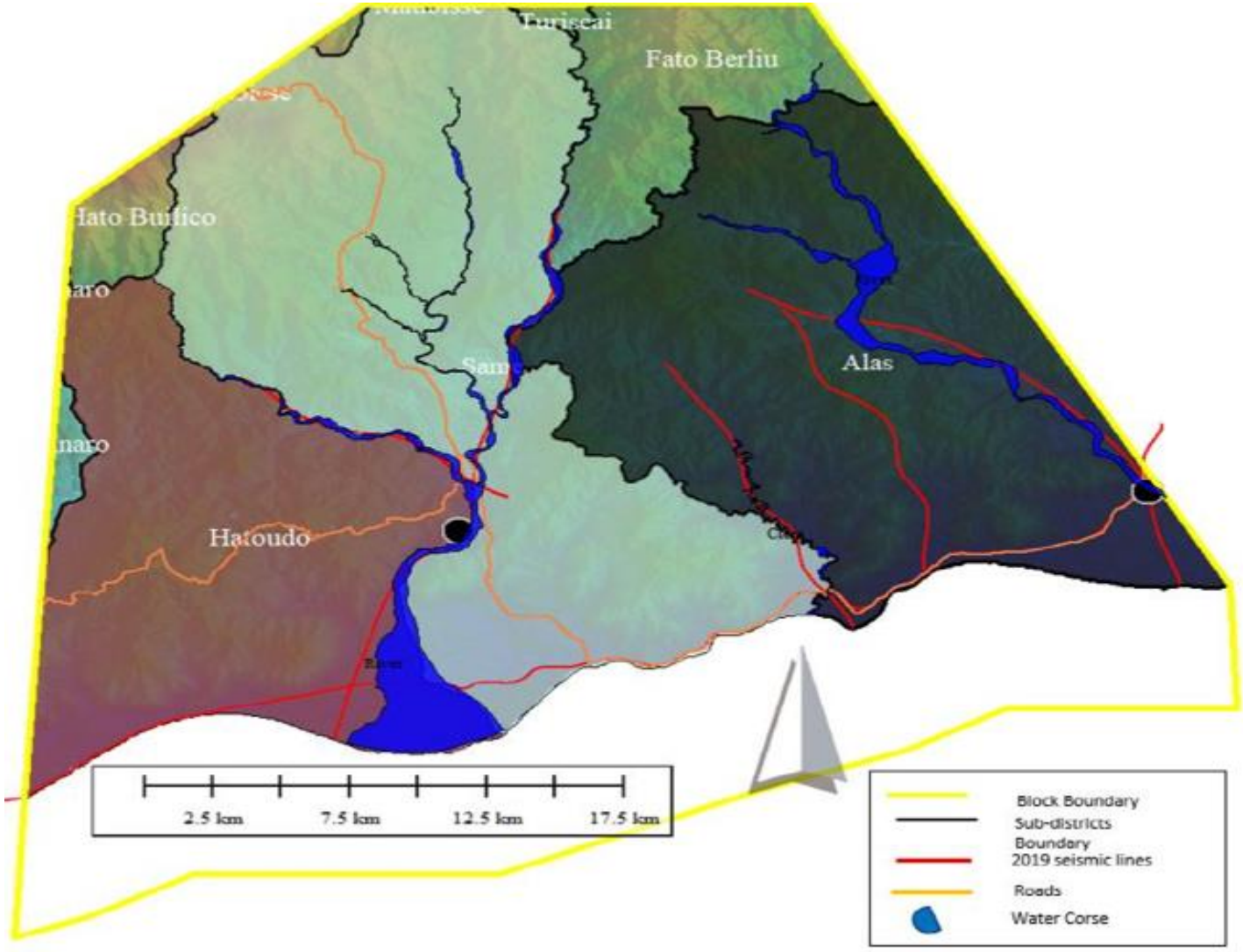

Figure 1 - Map of Proposed Project Location and Well Area of PSC TL-OT-17-09
(Source: Timor Resources, 2020)

All technical assumptions, conceptual well planning, fluid and drilling programs referenced in this TOR cannot be presented as finalized aspects of the project. They are all subject to review and adjustment immediately prior / during final DWOP (Drill Well on Paper), which will be the most critical technical gate process of the project. The DWOP requires participation, input and feedback from the major proponent / contractors in the project such as the drilling contractor and primary third-party services (Drilling & Measurement, Mud Logging, Drilling Fluids, Cementing, Open Hole Logging, etc.) whose specific equipment and service processes need to be factored into final well plans and drilling programs. The selected Rig Contractor will also be a major proponent of the TR led Risk Assessment processes:

i. Define the study area within PSC TL-OT-17-09

ii. Define the area that *may be affected* by the project;

iii. Define the project phases, including and as relevant; *pre-construction, construction, operation, and post operation phases;*

iv. Provide an indication of what *baseline data and information* will be required;

v. Identify the *policies and legislation*, including that from other line ministries, with which the proposed project must comply;

vi. Identify national and international standards and good environmental practices which the proposed project must comply;

vii. Identify the likely key environmental impacts, including *biological, physical, social, and economic impacts, that require detailed assessment;*

viii. Identify the *methodologies* that will be used for the impact assessments;

ix. Identify the issues to be focused upon when discussing *mitigation and abatement measures.*

The key assumptions for the design are:

- The Exploration Wells will be drilled in line with Decree-Law No.18/2020 Onshore Petroleum Operations and follow “Good Oil Field Practice” as stipulated under the Law.
- The spud-in date for the proposed project will be in July 2021.
- One exploration well will be drilled with a land drilling rig with specifications required to safely reach the prognosed targets. In the event of success, appraisal drilling would take place in the vicinity of the discovery.
- The 2020 Estimated Tops for the proposed location areas are presented in Table 2 below.
- Pore and fracture pressures, chemical composition of produced fluids and Thermal Gradients for one exploration well will not substantially deviate from the offset well data provided by Timor Resources.
- A requirement is to minimise expenditure on the Well on a dry hole basis whilst retaining the option to case the Well for completion in the success case.
- A standard evaluation Programme to identify oil pay and reserve potential is planned. If any Well is deemed to be potentially commercial an accelerated transition to appraisal is anticipated.

Table 1 - 2020 Primary and Alternative Well Location and Estimated Wells Tops

Rusa (central area)

Location
125° 40' 48.3595" E,9° 06' 24.8309" S
125° 41' 54.9645" E,9° 06' 16.3661" S
125° 41' 55.1730" E,9° 06' 54.1009" S
125° 40' 49.6096" E,9° 07' 07.2530" S
125° 40' 48.3595" E,9° 06' 24.8309" S

Well Tops

Formation Name	Depth (m SS)
Borolalo	-101
Waibua	125
Viqueque	288
Waibua	660
Wai Lua	1044
Jurassic – (Primary Target)	1135
Mid(?)Triassic Target	1610
NF-33 Fault Block Target	2250
TD (Option 1)	2500
NF-37 Fault Block Target	3250
Deep Decollement Target	3435
TD (Option 2)	3835

Kameli (SE area)

Location
125° 54' 52.6536" E,9° 05' 50.6065" S
125° 54' 16.6438" E,9° 05' 24.5690" S
125° 53' 31.9478" E,9° 06' 30.2674" S
125° 53' 50.1150" E,9° 06' 48.2470" S
125° 54' 12.3702" E,9° 06' 59.8632" S
125° 55' 01.8012" E,9° 06' 50.9792" S
125° 54' 52.6536" E,9° 05' 50.6065" S

Well Tops

Formation Name	Depth (m SS)
Ainaro Gravel	-49
Viqueque	83
Batu Putih	154
Waibua	296
Jurassic/Triassic (Primary Target)	1620
TD	2200

2 BACKGROUND INFORMATION

Timor Resources will conduct an exploratory drilling campaign in PSC TL-OT-17-09 to discover a commercial volume of oil based on a collective interpretation of new and existing surface geology and analyses, reprocessed 1994 2D seismic (Velseis Pty Ltd 2017, Geomage 2018), original 1969-70 2D seismic, core holes and oil and gas exploration wells.

The objective of the project is to test for hydrocarbons, with the ultimate goal to achieve a profitable volume of oil as part of visible contribution to government of Timor Leste through petroleum development, for the benefit of Timor Leste people. In achieving this outcome as integral part of attaining a commercial commodity, Timor Resources will explore by the means of drilling oil exploration wells.

The Contract Area defined by PSC TL-OT-17-09 is an area that covers approximately 1,285km^2, extending along the coast for approximately 40 km^2 and up to 30 km^2 inland. Within this contract area targets for drilling have been defined. To undertake drilling operations, consist of six major project components, namely: Site Construction; Mobilisation; Rig Move; Drilling; Suspension; and demobilisation at the end of the

drilling campaign. The details of these components will be provided in Section 7 (Description of the proposed project).

As per the Decree Law No.5/2011, this project was decided to entitle a Category A for drilling project Licence. Environmental A categories were granted for Onshore PSC TL-OT-17-09 Block C with a reference letter ANPM/HSE/S/18/228 on December 27th, 2018. As per Autoridade Nacional do Petróleo e Minerais (ANPM) opinion result based on Annex I of the Decree-Law No.5/2011 Environmental Licensing, Timor Resources were required to follow:

- Article 5.4 (g) of Decree Law No.5/2011 – Submission of Term of Reference (TOR).
- Article 9.1(h) of Decree Law No.5/2011 – Submission of EIS including its non-technical summary, and
- Article 9.1(h) of Decree Law No.5/2011 – Submission of EMP.

The single exploration well, Rusa, will be drilled as a primary well with a land drilling rig with specifications required to safely reach the prognosed targets. In the event of success, appraisal drilling would take place in the vicinity of the discovery.

Additionally, the secondary Area of Interest (AOI) or Prospect Kameli has also been identified during the interpretation stage in order to provide a backup option or alternative in case the primary Rusa drilling target is not drilled.

3 DETAIL OF THE PROPONENT

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4 DETAILS OF CONSULTANT

4.1 Details of the Consultants and Specialists

Timor Resources has engaged with Groena Circoal, a Timor-Leste registered national consulting company to carry out the EIA study to produce the EIS and EMP for the proposed project. Groena Circoal has been providing services to the domestic projects. Groena Circoal's have a number of key and highly qualified personnel. The following is the list of the proposed key personnel to be involved in this project:

Maria do Ceu Rosales

Maria is a graduate from the University of Western Australia majoring in Environmental Science and Business Law. She is an Environmental Scientist with more than 5 years' experience predominantly in the area of environmental assessment, management and public procurement.

She has led environmental studies on variety of environmental assessments and feasibility studies specifically for water resources management and has worked on a variety of projects from small-scale to large projects such as from established more than five water and sanitation projects to the rural communities and successfully completed marine environmental monitoring project for Tibar Port mega project. Maria has also involved extensively in drafting, review the laws and policy related to the procurement. She has more than 3 years of working experience in public procurement and preparation of contract and documents relating to Prequalification (PQ) of Bidders, Request for Quotation (RFQ) and Bidding Documents for the procurement of Goods and Works for ICB and NCB Contracts.

Emiliano de Oliveira

Emiliano is an Environmental Specialist with more than 8 years' experience in Environmental Impact Assessment (EIA), socio-economic and resettlement, Environmental Management Systems (ISO 14001), water-related issues, sanitation, occupational health & safety at work. He has been involved in various projects in both Timor-Leste and Indonesia, and is also a candidate for double Master's Degree in environmental science and Civil Engineering.

Pedro Pinto

Has 20 years' experience as an ornithologist and flora and fauna specialist. He has been working under Indonesian and Timor - Leste governments for Flora and Fauna Conservation. He holds a degree in Bachelor Science of Forestry.

Eufragio Xavier

Has over five years of experience in oil and gas sector, undertaking intense training and internship on HSE-related programs with ConocoPhillips Timor-Leste in Australia. He holds a degree in Petroleum Management.

Apart from the Timorese professionals, Groena Circoal also has access to highly capable international experts in various specialty areas to deliver a high-quality service within their consultancy group. In carrying out data collection and respective analysis for completing the EIA and EMP for this specific project, it is likely that Groena Circoal will only require local specialists: geologist, social scientist, flora and fauna and health and safety personal, including local guides in executing the EIA process. Analysis of primary data will be carried out in local laboratories sub-contracting local consulting company.

Reflecting on the consultant's experiences and expertise in the area, Timor Resources deems that the consultant is suitable, qualified, and competent to carry out the EIA study for the proposed project. The details of the consultant carrying out the EIA study will be also be covered in the structure/content of the EIA and EMP in the next phase of the study according to the Ministerial Diploma No.46/2017 of 2nd August 2017, Annex IV and VI regarding the minimum requirements for EIA and EMP. Hence, any additional information required regarding this section can be covered in the EIA and EMP.

5 LEGAL REQUIREMENTS

Government licensing (or approval) of the Drilling Campaign is required under Timor-Leste Decree-Law 5/2011 Environmental Licensing prior to the commencement of construction. In accordance with Decree-Law 5/2011, Drilling Campaign by Timor Resources is classified as a Category A project as it may have significant environmental impacts, and as such it is subject to the preparation of an EIA and an EMP.

The EIA required under national law is equivalent to an Environmental and Social Impact Assessment (ESIA) required for IFC Category A projects. This TOR has been prepared to meet the GoTL requirements and IFC Performance Standards, to guide the preparation of the EIA in accordance with the project approval conditions. The EIA will be prepared by the Block C Operator, deemed to be the Project "Proponent".

The EIA shall identify and assess the environmental and social risks and impacts of the Drilling Campaign, and design and incorporate appropriate impact avoidance and mitigation measures into Project design, construction and operation. This shall be done in accordance with:

1) National legislation and regulations;
2) International Standards and Guidelines, &
3) International Conventions and Agreements

The details of these laws, regulations, guidelines, action plans, agreements and conventions including their brief description and relevance to the purpose project are shown in the Table 2.

5.1 Environmental Assessment and Approval Process

Regulatory approval of oil and gas development projects is undertaken by the ANPM under Decree-Law 5/2011 Environmental Licensing that defines the environmental licensing system for public and private projects that are likely to produce environmental and social impacts. The licensing system sets out the process, procedures, roles and responsibilities of the "Project Proponent". The "Project Proponent" is defined as "a person, including a legal person, both public and private, who requires a license to

carry out a project" in the Decree. The Block proponent will be the private sector entity awarded the concession by GoTL to design, build and operate the Block.

The EIA process as shown in Figure 2 commences when the project proponent prepares a Project Document (PD) and submits this to ANPM. The PD identifies the proponent, describes the project, outlines the major likely impacts, provides layout drawings and site maps, and provides copies of any permits or government support already obtained. This has been completed by the ANPM as of October 30, 2018.

In accordance with Decree-Law 5/2011, Drilling Campaign by Timor Resources PSC TL-OT-17-09 is classified as a Category A development as it has "the potential to cause significant adverse impacts", and therefore requires a detailed EIA. For Category A projects the proponent must prepare a Scoping Report and Draft TOR for the EIA for review by GoTL. GoTL has a maximum of 15 Business Days to review the TOR and provide comments to the proponent.

The proponent – in this case the selected Operator of the Block C then prepares the Draft EIA in compliance with the approved TOR, incorporating an Environmental Management Plan (EMP), and submits this to ANPM for assessment. ANPM establishes an Evaluation Committee (EC) consisting of representatives of relevant agencies and institutions to review the Draft EIA, and the report is made available for public review. The maximum Draft EIA review period, including technical review and consultation, is 50 days.

The Final EIA is prepared by the proponent taking into account the comments received from the Evaluation Committee's technical review and public consultation, then submitted to ANPM for approval. If the project is approved, an Environmental Permit is issued and may contain conditions of consent, including the requirement to implement the mitigation and monitoring measures set out in the EIA, EMP and other Project management plans.

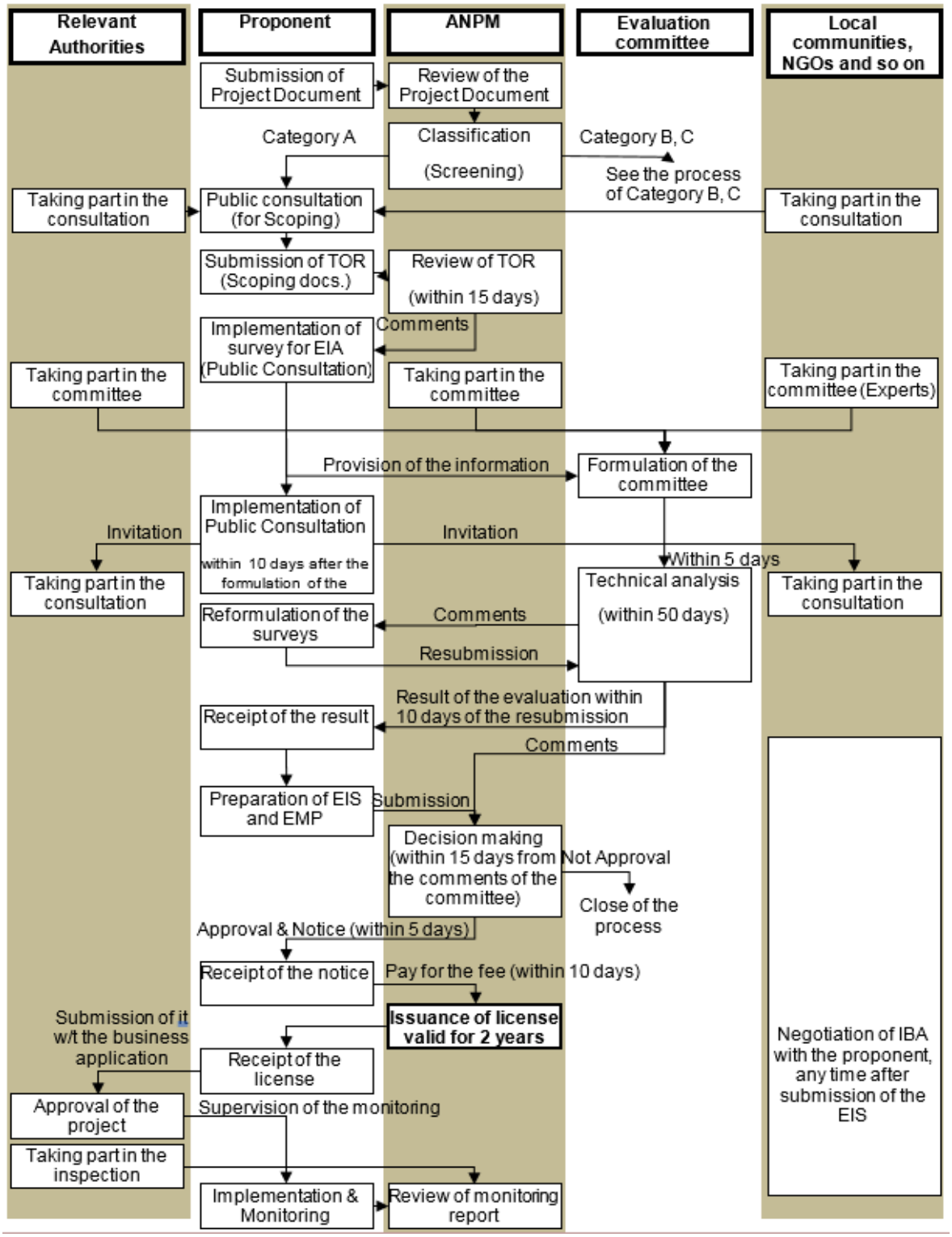

Figure 2 - EIA process for Category A

Table 2 - Applicable Timor Law, Regulations & International Guidelines & Standards

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
Timor-Leste National Legislation and Regulation		
Constitutions of the Republic Democratic of Timor-Leste Article 61 (Environment)	The article specifies provisions for state including the proponent shall undertake to defend, and safeguard the environment recognizes the right of all citizens to a humane, health and ecologically balances environment while also specifying the duty of everyone to preserve and protect the environment for the benefit of future generation	Provide the basis for environmental protection and safeguarding in the Country
Environmental (Licensing) Decree Law No.5/2011	The procedure for directing the environmental assessment, the review of application for environmental license, issuance and renewal of license. • Categorization of the project category according to severity of the environmental impacts. • Procedures and information requirement for Category A project • Organization and composition of the review committee and its duties and responsibilities. • Specific provisions for public consultation and the protection of the traditional customs and cultural practices. • The issuance of the decision by the Environment Authority on the review of the application and the rights of the project owner to appeal the decision.	Provides the Environmental Licensing procedure to regulate actions to encourage and protect the nature as an important instrument for sustainable development of economy of Timor-Leste
Decree Law No. 5/2016 – National System of Protected Areas (Appendix 1 – List of Timor-Leste Protected Areas)	This Decree Law defines the norms and principles for the creation of the national system of terrestrial and marine protected areas, for the classification of protected areas and for the approval of the applicable management instruments, according to the international best practices, in the matter, duly adapted the national reality, without forgetting the important role of community authorities and existing customs.	Provide the basis for the protection of the terrestrial and marine protected areas without putting aside the important role communities, authorities and existing customs.
Decree Law No. 26/2012 on Basic Environmental Law	The Decree Law identifies the protection of the environmental life and wildlife protection, including the basic principles for the conservation, preservation and sustainable use of natural resources in order to improve the quality of life of the local populations.	Communicate to the communities by providing information on the basis for the protection of environment and wildlife protection and sustainable use of natural resources through public consultation

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
Diploma Ministerial No.44/2017 – Impact Benefit Agreement	The article specifies the process for the agreement between the project proponent and the local community regarding the advantages and disadvantages of the project	As this is a category A project, the IBA will be implemented if it proposed by a member of community to ensure local or community's interest is considered and agreed proposal shall be implemented
Diploma Ministerial No.45/2017 – Rules and Procedures of the Evaluation Committee for Project with Category A	The article specifies the importance of establishing rules and procedures for the evaluation committee for the management of the environmental evaluation process for projects in category A	Establishment of a committee in order to review the project that categorise into category A.
Diploma Ministerial No.46/2017 – Detail requirements of Classification, Initial Assessment and Terms of Reference, Environmental Impact Statement and Environmental Management Plan	The article specifies the necessary of establishing a regulation to regulate projects that may have significant impacts on the environment, while also specifying the procedures and requirements to select projects that classified into category A, B and C.	Provides the environmental licensing and classification of the project into category A.
Diploma Ministerial No.47/2017 – Public Consultation Procedure and Requirement during Environmental Baseline Process	This Diploma Ministerial specifies the procedures and requirement of involvement of public and communities into different stages of the environmental assessment process through public consultation.	Provides information and communicate to the communities by providing information on the basis for the protection of environment and wildlife protection and sustainable use of natural resources through public consultation
Decree Law No 27/2020 dated 19 June Organic Law of VIII	Constitutional Article 33 (c) (Minister of Petroleum and Minerals) responsibilities item (o) Considering the complexity and technical expertise of the oil and mineral resources sector, conduct the respective environmental licensing procedures and approve the	Provides a description of legal framework that empower Ministry of Petroleum and Minerals to issue

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
	corresponding environmental licenses in that sector	environmental license.
Decree-Law No.18/2020 Onshore Petroleum Operations	Applies to Onshore Petroleum Operations including transportation, processing and storage of Crude Oil and Natural Gas with direct impact on any reservoir. In addition covers a broader scope of issues related with onshore activities, notably a legal statute that also addresses environmental and technical aspects related with the carrying out of onshore Petroleum Operations, such as rights of way through, on or over the land destined for Petroleum Operations, installation of pipelines, rules on geological, geophysical or geochemical surveys, environment. This Decree-Law No.18/2020 of 13 May also stipulated on matters pertaining to means and ways of intervention, expropriation, nationalization and privatization of means of production and land on grounds of public interest, as well as criteria for the establishment of compensations in such cases, including the appeal to the Government in case of any land dispute occurred.	Provides the fundamental legal framework for all oil and gas operations onshore Timor Leste
Forestry, Aquaculture and Fishing Legislation: Law No. 14/2017 – General Regime of Forestry	The article outlines the basic principles and standards for the management, protection, conservation and sustainable use of forestry and river basin resources. Moreover, it describes the importance of communities that utilise the forests to their need and prosperity and promoting sustainable development	Provide legal framework of the fundamental norm of the environmental protection and preserving the natural resources existence in the forests for sustainability of the economic development
Labour Legislation Law No. 4/2012 – Timor Leste Labour Code	This law describes the rights between employers and workers in regard to the working hours, leaves, remunerations, compensations and health and safety welfares	Provide basis for the project proponent to set up a working condition and contracts between employer and employee
Land legislation Law No. 13/2017 - Especial Regime for the Definition of Land and Property	This law provides legal jurisdiction of the owners of lands and the individual rights of their private properties according to the Article 54 (1) of the RDTL Constitution	As the legal basis for the project proponent to identify, access and compensate for any

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
		land used during the project activities
Waste Management Decree Law No.33/2008 – Hygiene and Public Order Decree Law No. 2/2007 – Urban Residual Waste Management	This law provides legal framework to manage the urban solid waste and ensure promoting the hygiene in the workplace	As the legal basis for the project proponent to manage solid waste are produced during any project phase. This to be set as the minimum criteria for the TR to establish its own waste management system
Cultural Heritage Legislation: Government Resolution No.25/2011 – Protection of Cultural Heritage (Appendix 4)	This Government Resolution is used to protect and preserve Timor Leste's cultural heritage until the Cultural Heritage National Law is made available. The resolution defines the type of the cultural heritages; archaeological heritage, architectural heritage, ethnographic and traditional heritage and intangible heritage	The resolution provides scope or boundary of the cultural heritage which has to be considered by project proponent.
International and Industry Guidance Documents		
Western Australian Department of Mines and Petroleum "Guidelines for the Development of an Onshore Oil Spill Contingency Plan 2016"	Provide Guidelines for the development onshore OSCP Provide mitigation measures to oil impacts sourced from the drilling activity.	Provide Guidelines for the development onshore OSCP Provide mitigation measures to oil impacts sourced from the drilling activity.
International Finance Corporation Environmental, Health and Safety Guidelines for Onshore Oil and Gas Development; April 30th, 2007	The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice. The guidelines are industry specific for onshore oil and gas and are designed to be used together with the General EHS Guidelines document (see below), which provides guidance to users on common EHS issues potentially applicable to all industry sectors.	Provide guidance on the application of good environmental practice.
International Finance Corporation Environmental, Health and Safety	The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice.	Provide guidance on the application of good environmental practice.

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
General Guidelines; April 30th, 2007		
United Nations Convention on Biological Diversity (UNCBD)	The Convention on Biological Diversity (CBD) entered into force on 29 December 1993. It has 3 main objectives: 1. The conservation of biological diversity 2. The sustainable use of the components of biological diversity 3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources	Timor Leste is rich of the biodiversity with significant ecosystem and endemic species. The country signed the convention in 2001. As the project could have impacts on the flora and fauna or risk to the loss of the biodiversity, it is fundamental principle for the project proponent to prevent or minimise the risk of biodiversity loss during the project implementation
United Nations Framework for Climate Change Convention (UNFCCC)	The United Nations Framework Convention on Climate Change (UNFCCC) provides a framework for intergovernmental efforts to reduce greenhouse gas emissions and adapt to the expected impacts of climate change. It also provides guidance to member states on developing and implementing national climate change strategies, incorporating both adaptation and mitigation actions. Timor-Leste became a signatory to the UNFCC in October 2006.	The project activities release GHG emissions which could be one of the contributing factors to the country's climate change issue. Minimisation climate change risks by reducing the GHG emissions are an essential part of the project environmental objective and target. This convention is the principle guidance for the project proponent to prevent the air pollutions and reduce the GHG emissions as much as possible.
IOGP Guidelines	The International Association of Oil & Gas Producers (IOGP) is the voice of the global upstream industry. Oil and gas continue to	Provide oil and gas industry specific guidance on the

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
	provide a significant proportion of the world's energy to meet growing demands for heat, light and transport. IOGP Members produce 40% of the world's oil and gas. They operate in all producing regions: the Americas, Africa, Europe, the Middle East, the Caspian, Asia and Australia. IOGP serve industry regulators as a global partner for improving safety, environmental and social performance and act as a uniquely upstream forum in which Members identify and share knowledge and good practices to achieve improvements in health, safety, the environment, security and social responsibility.	application of good environmental practice.
IPIECA Guideline	IPIECA is a not for profit association that provides a forum for encouraging continuous improvement in industry performance. IPIECA is the only global association involving both the upstream and downstream oil and gas industry. It is also the industry's principal channel of communication with the United Nations. IPIECA develops, shares and promotes good practice and knowledge to help the industry and improve its environmental and social performance. We do this with the understanding that the issues that dominate the sustainable development agenda – climate and energy, environmental and social issues – are too big for individual companies to tackle alone. The industry must work together to achieve improvements that have real impact. IPIECA helps to achieve this goal.	Provide oil and gas industry specific guidance on the application of good environmental practice.
Forestry, Aquaculture and Fishing Legislation: International Union for Convention of Nature (IUCN)	This international convention is and international organisation focus on the nature conservation and sustainable of utilising the natural resources. The IUCN works in the field to promote ecological conservation in order to ensure the sustainable development concepts.	Timor Leste is a signatory member of the IUCN convention which has responsibility to protect its ecological components to ensure the economic sustainable development. Therefore, baseline survey is used to identify all species categories listed under the IUCN red list which can be

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
		impacted by the project activities
Cultural Heritage Legislation: UNESCO Convention on Natural and Cultural Heritage	The convention mandates each signatory party to identify, protect, conserve, transmit and present to the future generations of the cultural and natural heritage	As the Timor Leste is a signatory member of this convention therefore this project activities ensure the protection and conservation of any cultural and natural heritage around the project locations
Noise and Vibration Standards and Regulation: WHO guideline for community noise	This WHO guideline is used to measure the noise level around the community areas and ensure the protection of people from discomfort environment and potential noise induce hearing loss	This guidance is used to ensure the noise levels arising from the project activities are contained or maintained between the WHO set values to protect everyone at or near the project locations are affected by unwanted sound caused by the project activities.
Air Quality Guidelines: WHO Air Quality Guidelines	WHO Air Quality Guidelines (AQG) offer guidance on threshold limits for key air pollutants that pose health risks and provide a reference for setting air pollution targets at regional and national levels to improve air quality. Air quality guidelines have been published by WHO in 1987 and they were revised in 1997. The 2005 update represents the most current assessment of air pollution health effects, based on an expert evaluation of the scientific evidence. The guidelines offer recommended exposure levels for particulate matter (PM10 and PM2.5), ozone, nitrogen dioxide and sulphur dioxide, as well as a set of interim targets to encourage a progressive improvement in air quality.	The air quality benchmark is used as reference by the project proponent is the WHO air quality guidelines.
Climate Change Kyoto Protocols	Kyoto Protocol is an international treaty which extends the UNFCCC parties commitment to reduce the green house gas according to the scientific consensus. The protocol implements	Timor Leste is the signatory party of the Kyoto Protocol which shall ensure the

TITLE	DESCRIPTION	RELEVANCY TO THE PROJECT
Government Resolution of National Action Plan for Climate Change	the objective of reducing the global warming potential gas in the atmospheres. The government resolution of national action plan for climate change (NAPA) is the first national document that identifies urgent and immediate climate change adaptation needs of the most vulnerable groups. It provides a starting point from which climate change adaptation can be mainstreamed into development plans as a key strategy for attaining sustainable development and poverty reduction (MDG, 2010).	implementation of the protocol in order to reduce the GHG emissions.
Water Resources WHO 2008 Guideline for Drinking Water Quality	These guidelines is used as the reference for the Timor Leste to ensure drinking water quality according to the WHO drinking water quality standard	As the guidance for the project proponent to test and ensure water quality around the proposed project locations before any drilling activities are taken place

6 STUDY AREA

6.1 Geographical Area

Geographically, the proposed drilling area in PSC TL -OT-17-09 for both primary well and alternative well is located within the two Posts Administrative (PAs), namely: Hatu-Udo and Alas. Within these PAs, six sucos are identified as proposed drilling area such as: Foho-Ai-Lico and Aituha, Dotik, Mahaquidan, Taitudac, Uma Berloic.

The primary proposed well of Rusa is located right at the margin of the south east end of the Ainaro Municipality, Hatu-Udo Sub-district of Suco Foho Ai-Li-Co and Aldeia Raimerlau. The drilling location is located up to 10 Km inland from the coastline.

Alternatively, the second proposed well of Kameli is located at the south east of the Contract Area border. The proposed well site is located within Suco Uma Berloic of Posto Administrative of Alas. The drilling location is located up to 5 Km inland from the coastline.

Table 3 provides the total population per Suco in the proposed drilling area based on the 2015 Census.

Table 3 - Population Size within Proposed Study Area, Manufahi
(Source: Statistics Timor -Leste Census 2015)

Post Administrative - Sucos		Total Households	Population Size
Post Administrative – Alas, Manufahi			
1	Suco Dotik	340 Households	Female: 920
			Male: 1,002
Total Population			**1,922**
2	Suco Uma Berloic	251 Households	Female: 690
			Male: 767
Total Population			**1,457**
Post Administrative Hatu-Udo, Ainaro			
1	Suco Foho -Ai-Li-Co	963 Households	Female: 2,353
			Male: 2,586
Total Population			**4,939**

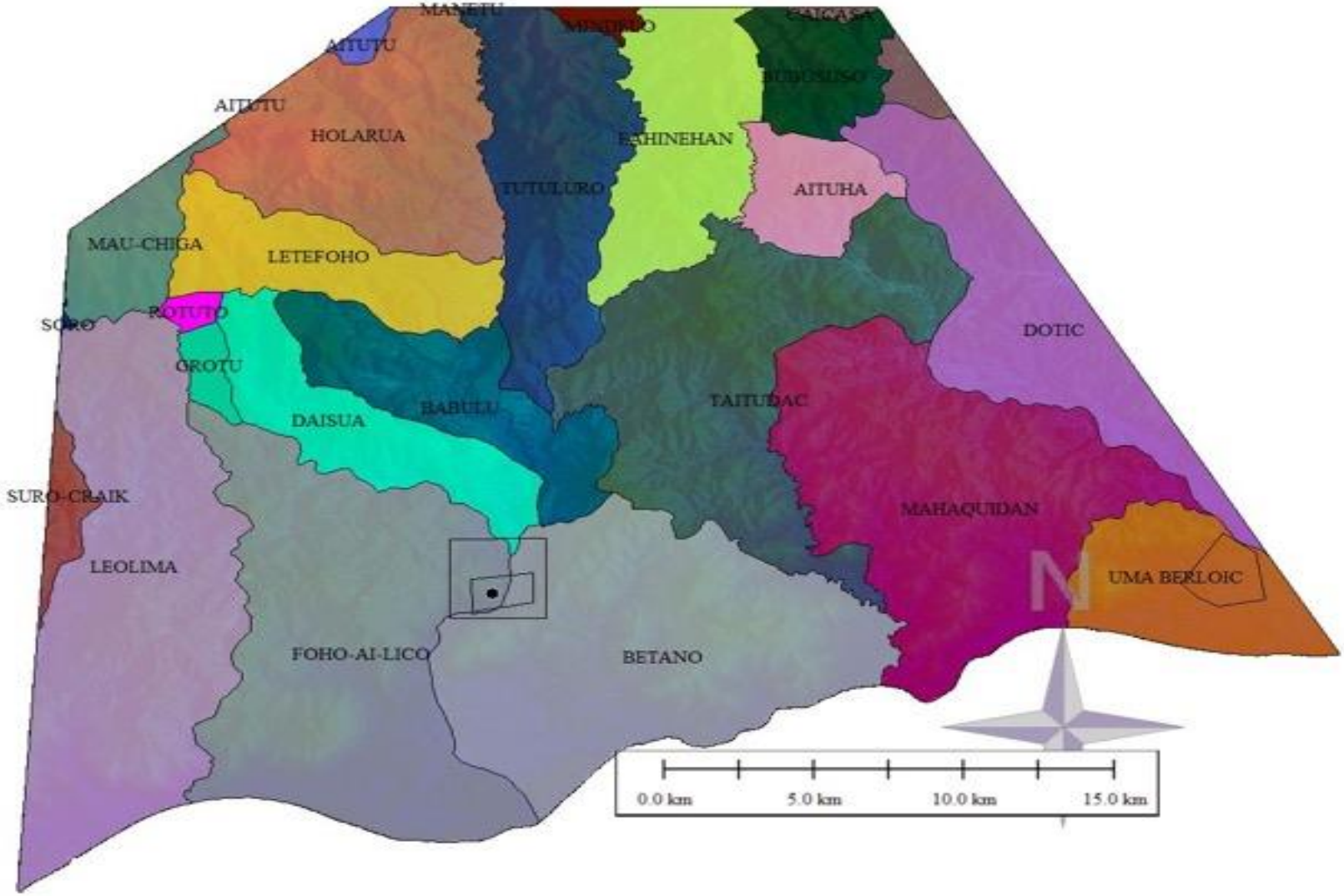

Figure 3 - Administrative Layout along the Proposed Drilling Area

The project area at primary location Rusa is broadly categorised as low relief and along the riverbed with small creek surrounding the proposed well site area. The area is heavily vegetated with man-made forest of teak, palm trees. The alternative Kameli well site area is located right in middle of community farm. The area consists of some seasonal staple crops such as maize/cassava, sweet potatoes, white potatoes and other agricultural crops, therefore the area is not very populated by trees/vegetation cover.

Figure 4 - Aerial view of project area in PSC TL-OT-17-09(Source: Timor Resources, 2020)

Figure 5 - 360º Panorama of Rusa Well Area (Source: Timor Resources, 2020)

6.2 Timeline

Table 4 - Proposed EIA Timeline for PSC TL-OT-17-09

EIS TIMELINE / PROCESS FOR BLOCK C	
Environmental Licensing Documentation for Timor Resources	
Task	**No. of Days**
TOR DEVELOPMENT & PUBLIC NOTICE ON BOARD	
Submission of the TOR	1
Public Notice on Board	10
Review of the TOR	15
Approval of the TOR	1
FIELD SURVEY & INITIAL PUBLIC ENGAGEMENT TO COLLECT THE DATA FOR THE PREPRATION OF EIA & EMP	
Initial Engagement and Data Collection (Health. Social, Economic, Flora & Fauna and Geology)	14
Sampling Collection (Air, Noise, Water and Soil) by KM Consulting	7
TR Received the Result of Initial Field Survey and Lab Results	14
Preparation of EIA and EMP	1
EIS AND EMP PRESENTED TO ANPM	
Submission of EIA and EMP draft to ANPM	1
Preliminary Comments on the Draft of EIA and EMP by ANPM if any	1
Final Submission of the EIA and EMP	1
Formulation of Evaluation Committee	10
Public Consultation on EIA and EMP	24
Technical Analysis	50
TR Received Evaluation Committee Comments	1
Resubmission of EIA and EMP after Reformulation	1
TR Received Results of Evaluation Committee of Resubmission	10
Final Submission of the EIA and EMP	1
Decision making from the comments of the Committee	15
Approval & Notice	5
Receipt of the Notice (Pay for the Fee)	10

6.3 Maps

6.3.1 Rusa

Rusa well site is in suco Foho Ai -LiCo. The well site is flat, predominantly dominated by teakwood tress and sago. The site soil is broadly categorised as brown to black with medium sand and alluvium. Currently there is no access to the well site, only the small track from suco Foho Ai -LiCo and Aldeia Sessurai across the Karau Ulun river. Therefore, access road will be opened or built for the purpose of mobilization of drilling rig and associated equipment as well as during drilling operation. The well is also located approximately 0.295 km from Karau Ulun river. The main receptors within the envelope of the study area mainly consists of a primary school and settlement along the main road in Aldeia Sessurai and few settlements located in suco Foho Ai-LiCo around 0.160 km from Rusa well (Figure 6). Hence, potential environmental and social impacts may be experienced by suco Foho Ai-LiCo and Suco Betano respectively.

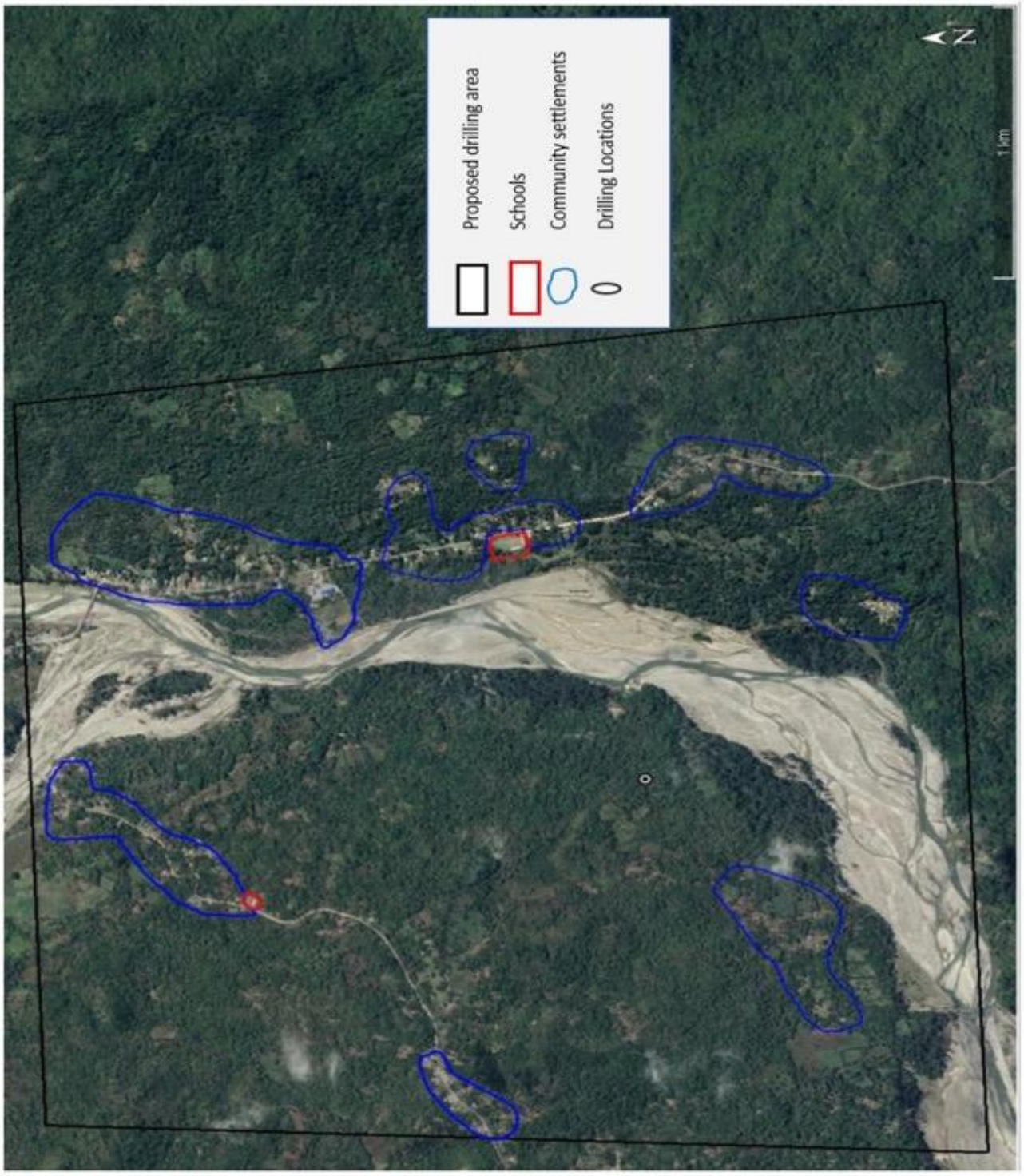

Figure 6 - Community Settlements and Schools within Rusa Well (Source: TR,2020)

Figure 7 - Picture of Rusa well area
(Source: Timor Resources,2020)

Figure 8 - Small track to Rusa Well
(Source: Timor Resources,2020)

Figure 9 - Small gully near Rusa well site

(Source: Timor Resources, 2020)

Figure 10 - Karau Ulun River close to Rusa well

(Source: Timor Resources, 2020)

Figure 11 - Nearest settlement from Rusa Well Area

(Approximately 1 Km)
(Source: Timor Resources,2020)

Figure 12 - Eskola Basica Filial at Aldeia Sessurai

(approximately 1 Km across the Karau Ulun river from the Rusa well)
(Source: Timor Resources, 2020)

6.3.2 Kameli

Figure 13 shows the map of Kameli well which is located at Suco Uma Berloic and shared boundary with suco Dotik, with additional photographs from the area in Figures 14 to 16. Kameli well site is characterized by alluvial soil that is flat, silty and predominantly clay. The community area is approximately 0.25 km from Kameli well in the north west. Kameli well is located in the middle of the community farm and it is 1.22 km away from Laclo river, same distance from Fat Rua cultural site. The river is seasonally dry. However, the area is also located in a flood plain, which frequently experiences flooding during monsoon.

Figure 13 - Overall Layout of Kameli Location

(Source: Google Earth)

The well is located close to the Laclodosul river is 0.36 km from the well site and the river is seasonally dry.

The environmental and social impacts can be associated with the nearby sucos of Uma Berloic and Suco Dotik. The well is approximately 6.84 km from Clere and Lake Modomahut.

On the social aspect, the nearby aldeia Kuloan towards the south of proposed Kameli well site (approximately 2 Km) is considered as potential affected community to be assessed.

Figure 14 - Picture of Kameli Well Area
(Source: Timor Resources, 2020)

Figure 15 - Closest school to Kameli well area

(Approximately 2.5Km)
(Source: TIMOR Resources, 2020)

Figure 16 - Closest settlement to Kameli well area

(Source: Timor Resources, 2020)

6.4 Cross Border Significant Environmental Impacts

There are no envisioned cross border issues given the location of this project.

6.5 Review of Previous Studies and Information

A Basis of Well Design (BOD) was prepared to identify operational requirements and common risk factors as determined by offset well data and prognosed geological formations to be drilled. The BOD is the result of work done by TR and ED.

Over the previous two and a half years Timor Resources has conducted a detailed analysis of all available offset Geological and Engineering data which was used to construct the elements of the BOD. The BOD has been applied to each programmed well to address specific requirements subject to the objectives and location. The detailed Well designs will be included in the individual programmes and the relevant Standard Operating Practice (SOP).

7 SCOPE OF THE WORK TO BE CARRIED OUT DURING THE STUDY PHASE

7.1 Description of the Proposed Project

The project will cover an area of approximately 1 ha which will encompass the following aspects or major components:

1. **Site Construction and Access:** Prior to the arrival of the Drilling Rig, work will commence on the clearing and levelling of the drilling sites, access roads and, if required, upgrading of existing road infrastructure to accommodate movement of equipment to the nominated sites with 20 m width. The detailed information of the estimated size of land area for both access roads and drilling site will be covered in the EIS.
2. **Mobilisation:** The forward base for the arrival of equipment from Suai, following the Block A drilling programme, will be located on land available to Timor Resources, at Betano.
3. **Rig Move:** Once all the necessary components are ready, they will be transported to the location and following rig-up and drilling operations will commence.
4. **Drilling:** The well will be drilled to target depth and evaluated for presence of hydrocarbons. On encountering hydrocarbon indications, of enough encouragement, a testing programme will commence.
5. **Suspension, Completion or Abandonment:** Once the Well has been evaluated it will be suspended or completed in the case of a discovery, or permanently plugged in the case of a dry hole, and the site re-habilitated.
6. At the end of the campaign the results will be assessed, and the forward programme agreed in accordance with GoTL requirements.

A detailed Drilling Programme will be prepared which will include a detailed description of each stage of the operation, based on the engineered Well Design. It will contain the necessary information to conduct the operation in a safe and efficient manner with due consideration for the local community and the surrounding environment.

The Drilling Programme will include:

- General Information
- Technical & Operational Risks
- Geological and Engineering Hazards
- Formation Evaluation
- Well Control
- Casing
- Drilling Fluids
- Bit and Hydraulics
- Cementing
- BHA & Wellhead
- Drilling Operations Sequence
- Generic Well Testing procedure

As part of the drilling programme process, various contingency plans will be in place to include well control, lost circulation, H_2S and oil spills. All necessary persons will be conversant with these contingency procedures. Practice drills will be carried out on a regular basis on the rig to ensure crew awareness and readiness is maintained. Drills shall include, but not be limited to, Muster, Kick, Fire, Spill and Medical Evacuation from the drill floor. Details shall be recorded in the Daily Drilling Report. Prior to the commencement of drilling operations, a Wells Risk Assessment/DWOP will be conducted. Note that H_2S is considered to be a low likelihood given the offset data, hence, will be addressed by routine monitoring (ambient and drill fluids) and if encountered follow standard procedures for low volumes to bleed circulating to atmosphere.

1. Drilling work step
    a. Equipment and materials needed for the project will be transported from Suai. The Rig and Pipe would be transported to the site by means of a barge/LCT and trailer trucks. Other materials used during construction and operation phase will include concrete, cement and chemicals. Transport of radioactive and explosive materials will necessitate special, handling as dictated in regulations, Decree-Law No.18/2020 Onshore Petroleum Operations.
    b. Rig moves to well location.

c. Rig up the drilling rig and all drilling equipment, ensure all in working order.
d. Set and cement conductor.
e. Drill 17.5” hole, log and set 13.375” casing.
f. Drill 12.25” hole, log and set 9.625” casing.
g. Drill 8.5” hole, log and set 7” Liner.
h. Perforate and test in 7” Liner if required.
i. Perforate and test in 9.625” Casing if required.
j. Carry out Well abandonment or suspension program by setting either temporary or permanent plugs into the wells.

2. Access
    a. Where available the access to the location will make use of existing roads and infrastructure.
3. Water Requirement
    a. The water supply will be taken either from the closest river/creek by digging out a pool.
    b. Trucking from another place, using an existing water well.
    c. It may be possible to use sea water.
    d. If no alternatives, then drilling a water well.
4. Cutting & Cement Pits
    a. The drilling well will generate cuttings and excess cement.
    b. The cuttings and cement will be stored in a lined pit constructed on location. The preferred disposal option is to dispose of the dewatered cuttings and cement by encapsulation in the onsite pit, sealed with HDPE liner and covered with a minimum 1m of consolidated soil. If the decision is made that the cuttings and or cement cannot be encapsulated onsite then the option to land farm cuttings or dispose of at an approved municipal waste facility may be considered.
5. Well Construction Program
    a. Well design

b. Pore and Fracture pressure, chemical composition of produced fluids and thermal gradients for the exploration wells are not to substantially deviate from the offset well data provided by Timor Resources.
c. Requirement is to minimize expenditure on the wells on a dry hole basis whilst retaining the option to case the well for completion in the success case.
d. A standard evaluation program to identify oil pay and deliverability is planned.
e. If any well is deemed to be potentially commercial a transition to appraisal is anticipated.
f. Equipment Layout as per Figure 18

6. Drilling Land Dimension
    a. The overall land dimension is approximately 100 x 100m but will be minimised to reduce impact where practicable. The Rig location contains all equipment and buildings, storage, workshops, mini-camp, etc. Two (2) meter perimeter drainage ditch, berm and fence will be installed.
    b. Earthen and compacted clay flare pit placed 30m from the well and inside the fence line.
    c. Lined pits to contain excess water, mud and cement will be excavated on location.
7. Site Preparation on Land
    a. The well located a minimum of 50 meters away from public roads, public works, and 100m from houses or other places in which a source of ignition may arise. Safe distances from any radio transmitters will be established so that use of explosives and detonators may proceed without danger of external activation. All practicable means will be taken to minimize or avoid any detrimental effect on the surrounding environment by virtue of the construction of the location or the operation of the drilling rig.
    b. All soil will be stored for future rehabilitation. Materials such as trees, undergrowth and other combustible material will be cleared from the sites for a safe distance outside the perimeter fence.

c. Excavation work will be carried out in such a manner that the collapse of side walls is precluded. Measures will be taken to prevent persons accidentally falling into an excavation. Proper illumination at night will be provided during excavations.

d. Source of ignition, naked lights, unprotected electrical equipment, smoking and all other sources of ignition will be prohibited or restricted to specific areas (e.g. hot work area) on all drilling/well sites. When internal combustion engines are permanently used within a hazardous area, they will be equipped with the spark arrestor.

e. Vent, flare pits and extremities of flare lines located at least 90 meters from roads, public works, process units or tanks. They will be located at least 30 meters from the wellhead, gas/oil separator, site drainage or other possible source of ignitable vapours. Means to ensure that noxious gases, e.g. H_2S, should they be present, are disposed of safely. Prevailing winds will be considered when constructing flare pits.

f. Warning and other notices stating restrictions will be prominently displayed, indicating where fire-fighting equipment, breathing apparatus and first-aid equipment are stored (see Figure 18). They will be written in Tetun language, English and Bahasa Indonesia.

g. Access and escape to/from drilling location will be confirmed during site survey.

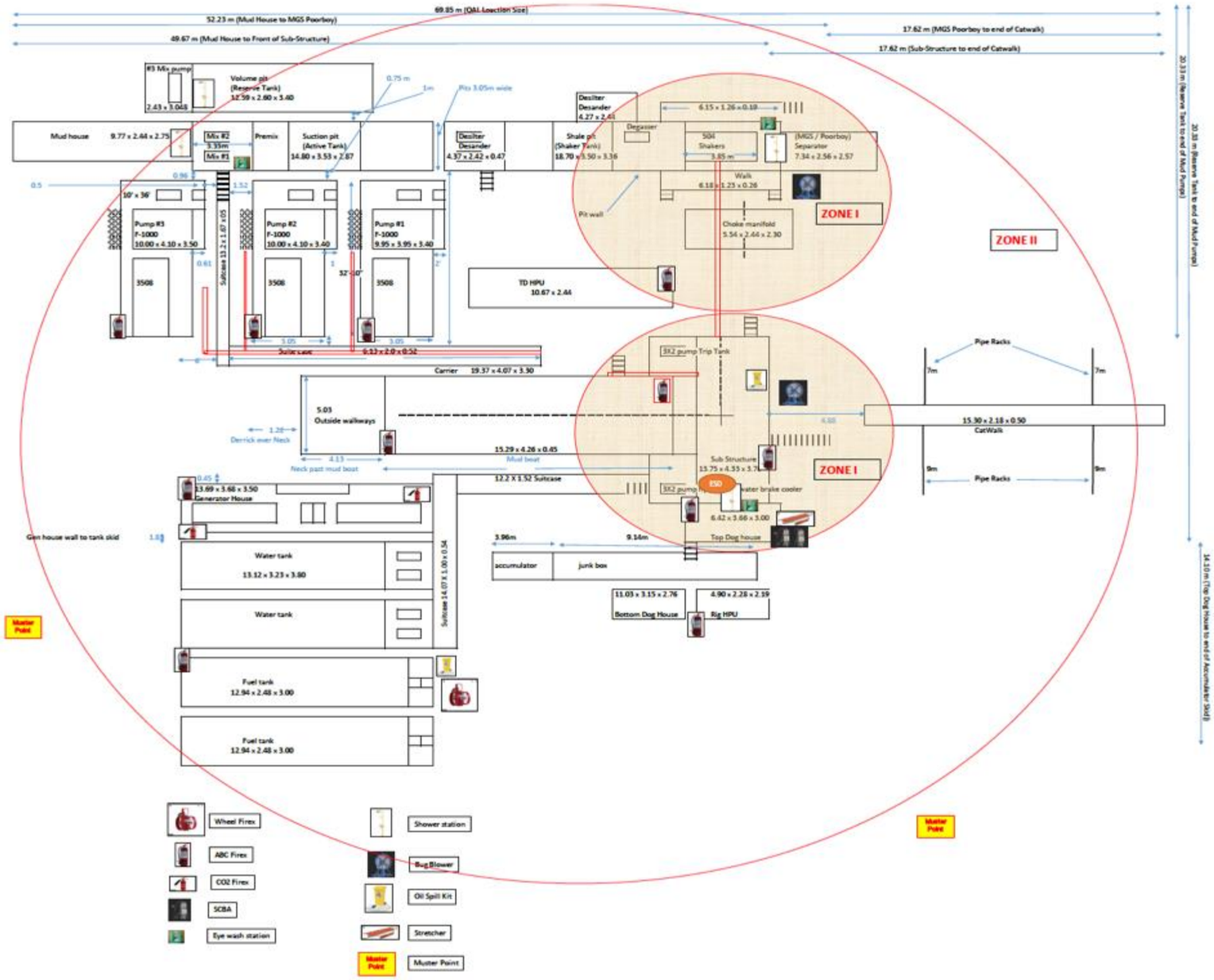

Figure 17 - Well Pad & Drilling Equipment Layout (TR Safety Case 2020)

h. Full earthing provided, verified, and documented. The maximum permissible resistance to earth is 4 ohms. Where necessary boreholes to provide a ground to earth will be provided.

i. Fuel storage will be segregated away from the general accommodation area surrounded by an adequate bund wall and adequately marked with hazard signs and cautionary notices (e.g. 'no smoking'). Explosives and radioactive sources together with any other hazardous substances will be stored in defined areas at the well site.

j. Fire extinguishers provided for all accommodation units including kitchens, mess room, recreation rooms, clinic, etc. Further firefighting facilities provided around fuel tanks, vehicle parking areas and the camp generator.

8. Type of Rig

a. The ED Rig 1 is a single drum drilling rig powered by tandem two C-15 engines 540 horsepower with cross mounted frame and compound chain drive. The Drawworks is mounted on a heavy-duty 4-axle trailer. Figure 19.

b. There will be equipment associated with the drilling rig such as Air Compressor, Cementing Unit, Mud Logging Unit, Wireline Logging Unit, Generators, Pumps and Heavy Vehicles.

c. The project proponent will submit to the Ministry a verification report, prepared by a Third Party consultant, prior to the commencement of drilling operations as required under Decree-Law No.18/2020 Onshore Petroleum Operations.

d. The verification report will be based on a review of the relevant documents, including the Drilling Program, a detailed physical inspection of the Drilling Installation equipment and systems, and the performance of such tests as may be appropriate.

e. The verification report will include a detailed inspection of the drilling installation, equipment, and system prior to undertaking drilling operations

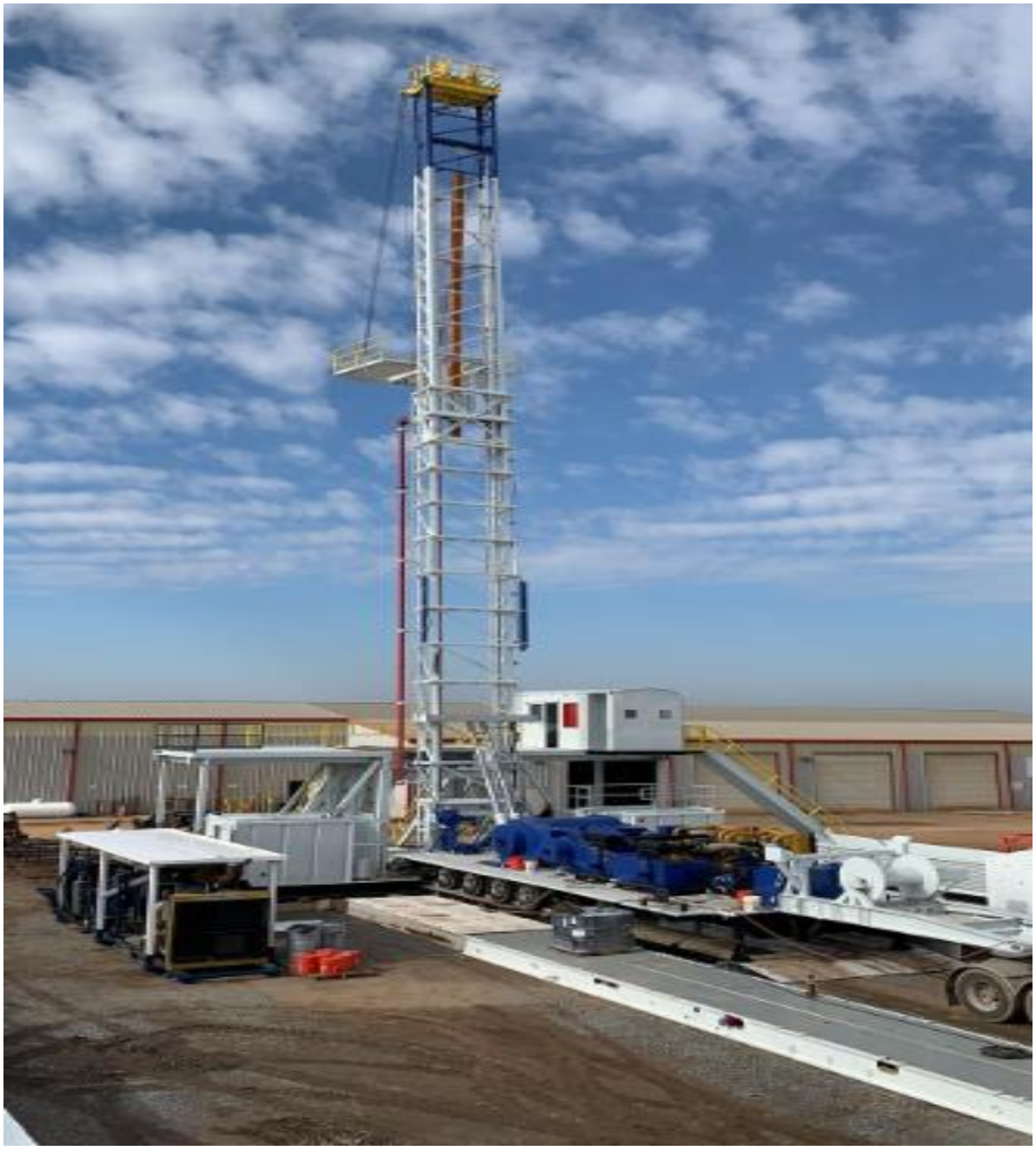

Figure 18 - Eastern Drilling Rig #1

f. The project proponent will comply with Article 37 Decree-Law No.18/2020 Onshore Petroleum Operations to provide a third-party to verify that, as a whole, the equipment, systems and operational practices for well control meet the requirements of the Decree-Law and best oil industry techniques and practices.

g. TR Authorized Person will ensure that equipment used for carrying out Drilling Operations is maintained in good working condition and fit for purpose prior to and at all time during the execution of the Drilling Operations and Subjected to inspections required by Decree-Law No.18/2020 Onshore Petroleum Operations and Good Oil Field Practice.

h. TR Authorized Person ensure that equipment, materials and operational practices used for Well control, including those used in Drilling Operations and any associated equipment or systems satisfy the requirements of the Decree-Law No.18/2020 Onshore Petroleum Operations and Good Oil Field Practice. He/she shall not remove installed Blowout Prevention Equipment until all necessary steps are taken to ensure the Well is safe.

i. A secondary control system and a secondary power source capable of activating the Blowout Prevention Equipment will be established in case the primary control system or primary power source fails.

j. A Production Test or drill stem test on a Well will only be conducted with prior approval of the Ministry.

k. A Well will only be abandoned or suspended with prior approval of the Ministry. An application for abandonment or suspension of a well will be submitted to the Ministry at reasonable time prior to the commencement of abandonment or suspension operation. The application for abandonment or suspension of a Well includes the details for safe abandonment or suspension plan, including casing removal plan, location of abandonment plug, length and quality of cement plug and fluid to be used in completed abandonment or suspended well.

l. TR Authorized Person will ensure that where a well or a portion of a well is suspended or abandoned, such suspension or abandonment takes place in a manner that: prevents any formation fluid from flowing into another interval

within that well-bore or escaping from the well-bore; facilitates location of every well that is suspended or abandoned; and provides for isolation of all petroleum bearing zones, discrete pressure zones and potable water zones.

m. A Drilling Rig is not removed from a Well drilled unless the Well has been completed, suspended or abandoned in accordance with Decree-Law No.18/2020 Onshore Petroleum Operations and Good Oil Field Practice. TR Authorized Person will ensure that upon completion or abandonment of any Well the surface area is cleared of any material or equipment, unless the Ministry otherwise approves.

9. Employment Opportunities

   a. Labour in exploration well drilling activities are generally skilled and experienced with certified experts in key supervisory roles. The number of workers needed for the drilling campaign is approximately 112 people (Table 5 below). Skilled manpower must be trained and certified and meet the requirements as stipulated by Decree-Law No.18/2020 Onshore Petroleum Operations and Good Oil Field Practice.

Table 5 - The number of workers used for the Drilling Campaign
(TR,2019)

NO	TITLE /POSITION	CERTIFICATION	NATIONALITY	NUMBER (ESTIMATE ONLY)
1	Company Man	Yes	Expatriate	1
2	Drilling Engineer	Yes	Expatriate/Timor Leste	1
3	Well Site Geologist	Yes	Expatriate +Timor Leste	2
4	Material Man – Logistic	No	Timor Leste	1
				5
DRILLING CONTRACTOR				
1	Rig Superintendent	Yes	Expatriate	2
2	Tool Pusher	Yes	Expatriate + Timor Leste	2
3	Electrical Supervisor	No	Timor Leste	2
4	Mechanical Supervisor	No	Timor Leste	2
5	Driller	Yes	Expatriate + Timor-Leste	3
6	Assistant Driller	Yes	Expatriate / Timor Leste	3
7	Derrick man	Yes	Expatriate / Timor Leste	3
8	Floor man	Yes	Timor Leste	12
9	Roustabout	Yes	Timor Leste	15
10	Mechanic	Yes	Expatriate / Timor Leste	3
11	Electrician	Yes	Expatriate / Timor Leste	3
12	Welders	Yes	Timor Leste	3
13	Crane Operator	Yes	Expatriate / Timor Leste	3
14	Radio Operator	Yes	Timor Leste	3
15	Catering Personnel	No	Timor Leste	9
				68

NO	TITLE /POSITION	CERTIFICATION	NATIONALITY	NUMBER (ESTIMATE ONLY)
SERVICE COMPANY				
1	Mud loggers	Yes	Expatriate / Timor Leste	2
2	Mud Engineers	Yes	Expatriate / Timor Leste	1
3	Electric Logging Engineers	Yes	Expatriate	1
4	Electric Logging Technician	Yes	Expatriate / Timor Leste	3
5	Cementing Engineers	Yes	Expatriate	1
6	Cementing Technicians	Yes	Timor Leste	4
7	Cementing Helpers	No	Timor Leste	3
				15
UNSKILLED LABOR				
1	Labour	No	Timor Leste	14
2	Load masters	No	Timor Leste	3
3	Security Guard	No	Timor Leste	4
				21
TOTAL				**109**

7.2 Description of the Environmental Conditions

7.2.1 Geology

The majority of Block C has an elevation ranging from <100 m to 1000 m. The drilling locations are south of areas identified as mountainous, occurring on flat, nearly flat, and hilly terrain.

The proposed drilling programme is designed to test two play types within the area of Block C (PSC TL-OT-17-09) which are:

- A target interval of Jurassic to Triassic age interpreted as either interbedded sands e.g. Plover or Foura member equivalents or age equivalent carbonates.
- A deeper Sub-Decollement target which possibly represents underplated Australian continental clastic material.

The drilling location will be subjected to further geological investigation, assessment of the ground conditions, infrastructure, and environment, proximity to habitation and agriculture and community and government agreements.

In addition to the locations proposed, a drilling *"Play Fairway"* is required to maintain the flexibility of the drilling campaign to take into account the Well results and optimise the chance of success during the course of the operation. For this reason, the Project Document sets out a number of areas for which drilling approval is sought.

7.2.2 Soil

The proposed well sites are mostly located on a flat coastal plain with vegetation ranging from teak wood, grassland, palm trees etc.

Within the project areas, the well site along the suco Foho Ai-LiCo, the soil types are broadly categorised as brown to black with medium sand and alluvium. To the east side of well site along suco Uma Berloic there is also brown to black soil, alluvium and clay. The latter suco, most of the land is used as farmland, it is recognised as community farmhouse, unlike the Rusa well area which is largely dominated by forest. See Figure 4 and Figure 5.

A comprehensive environment sampling and analysis programme will be conducted around the proposed well locations with result provided in the relevant sections of EIA and EMP.

Figure 19 - Example Surface Soil in the Proposed Drilling area

(Source: Timor Resources 2020)

7.2.3 Ground Water

Groundwater is the principal source of drinking water in Timor-Leste and natural groundwater springs are the dominant source of water supply in rural areas, supplying potable water to approximately 60% of the population (ADB, 2001), an example is shown in Figure 21 below.

Figure 20 - Example of existing water well in Block C

(Source: Timor Resources, 2020)

TR applies World Health Organisation (WHO) drinking water guidelines as a standard to assess the state of groundwater quality. The outcome of the groundwater sampling will be included in the EIA report.

7.2.4 Surface Water

There are two large rivers within the proposed drilling area namely Karau Ulun river and Laclo river (see the drainage network shown in Figure 23). The river water quality is expected to vary seasonally, but during the wet season, community come to the rivers at midday to catch small prawns for consumption and sometimes to sell. Examples are shown in Figure 22 below.

Figure 21 - Example of Surface Water in Block C

(Source: Timor Resources, 2020)

In addition, there are four (4) wetlands/swamps forest identified close to the project area in particular Kameli well area. The distance for each wetland is shown in Table 6.

Table 6 - Distance of Identified Swamps/ Wetland close to the project area
(Source: TR, 2020)

No	Approximate Distance	Rusa Well	Kameli Well
1	Cascuter wetland	-	3.98km
2	Kuhus wetland	-	3.98km (share boundary with Cascuter Wetland)
3	Laclo river swamp forest	-	5.33 km
4	We Susu Ulun swamp forest	-	1.51 km

More information will be collected regarding the quality, utility and detail of water resources in the proposed location, including rivers as well as other identified surface water. The ecosystem value of each wetlands/swamps forest in the project area will be examined through on-site investigation.

7.2.5 Noise and Vibration

The noise observed during scouting within the proposed project areas was normal. This noise is mostly generated from the nearby community activity during the daytime as well as movement vehicles, considering the samples were taking mainly community area and nearby schools. Vibration generated from the drilling activity especially movement of heavy equipment during operation will be conducted to identify the impacts.

7.2.6 Air Quality

Air quality information will be cited from secondary sources such as the Betano Refinery and LNG Plant EIA report (Worley Parsons 2017), a limited air quality survey and lab analysis will also be conducted to provide a primary baseline for comparison with the secondary data.

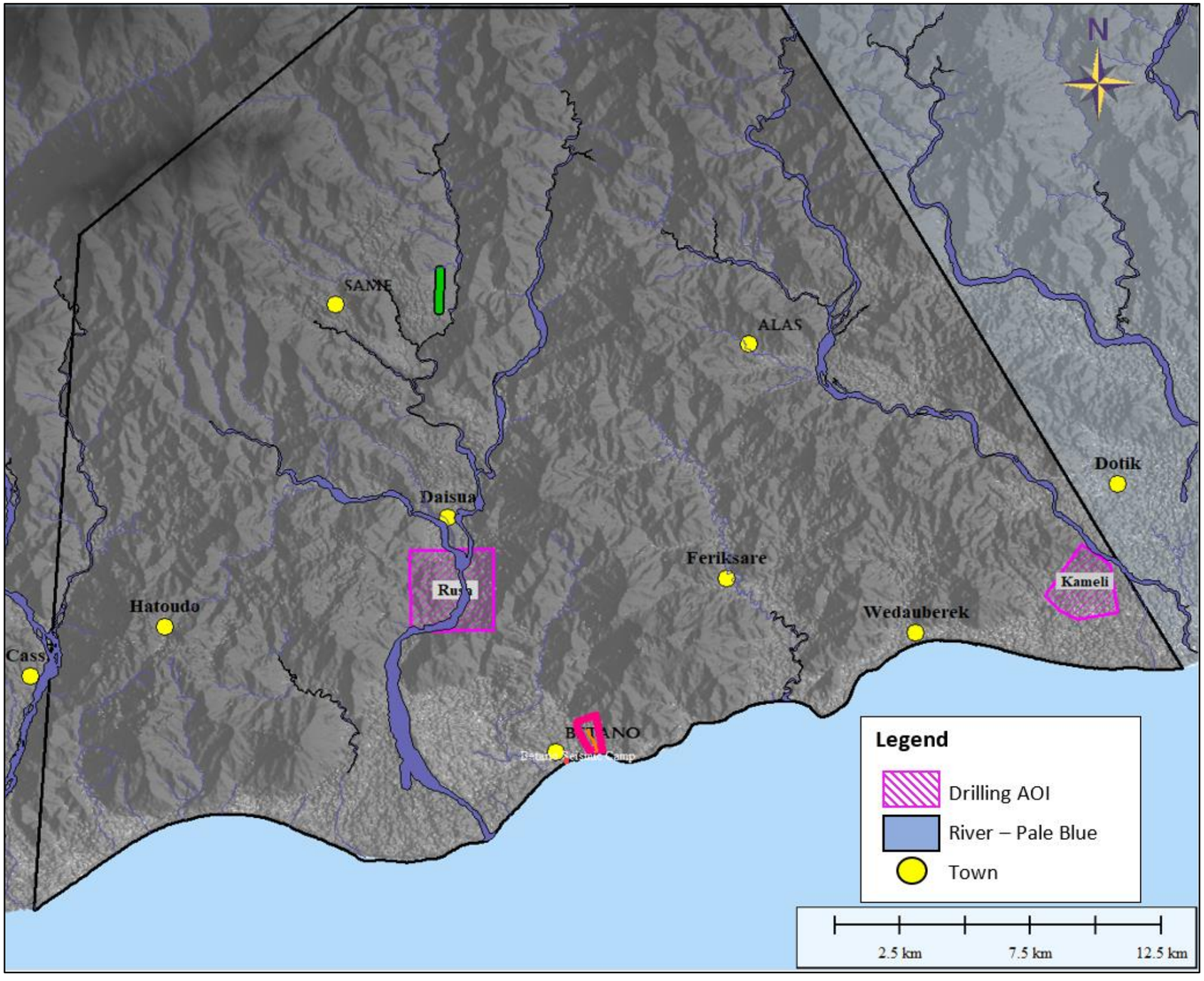

Figure 22 - Drainage network interpretation within proposed drilling location PSC TL-OT-17-09

7.2.7 Solid and Liquid Waste

Most of the proposed well sites are located quite a distance from community settlements. Therefore, there is no disposal or dumping area identified in the vicinity of the proposed drilling site. Solutions for the safe disposal of materials will be investigated, based on potential for impact on the environment. Such solutions would conform with the government and local authority requirements and good oil field practice. Clear waste segregation will be implemented throughout the drilling campaign. Detailed waste management plan covering both solid and liquid will be provided in the Environmental Management (EMP). Waste dumping is common - see Figure 24.

Figure 23 - Example of waste dumping area by community around the well sites areas

(Source: Timor Resources, 2020)

7.2.8 Method of Collecting Data

Secondary data used for developing EIA and EMP will be obtained from various sources and collated into a useable reference, for example, the Suai Supply Base Project EIA (Worley Parsons 2015) and the Betano Refinery and LNG Project EIA (Worley Parsons 2015). Data sources and data years (less than 5 years) will be also included in tables, maps and description.

7.2.8.1 Geology

An extensive surface geological database is available, as obtained from the result of surveys conducted by Timor Resources.

7.2.8.2 Soil

Soil sample will be taken using a clean shovel and put into a clean plastic bag to determine the physical and chemical properties from the proposed well sites. Samples will be collected from each of the well sites, nearby community and schools, there will be a total of 6 samples (3 from each proposed well sites). Once collected, the soil samples will be tested and analysed in the laboratory. In doing this, Timor Resources will engage with KM Consulting a Timorese local lab for analysis and result. The physical samples will be tested on site, whereas the soil chemical properties will be analysed by the laboratory. Soil parameters to be measured are shown in the Table 7.

Table 7 - Soil Parameters to be Measured

No	Parameters
1	Moisture
2	Sunlight
3	Soil Temperature
4	Soil pH
5	Nitrogen (N)
6	Phosphorus (P)
7	Potassium (K)
8	Soil Composition (HCL)

7.2.8.3 Ground water and Surface water quality

Water Quality sampling will be collected using water sampler tool. At each sampling location one water sample (not composite) will be taken. The water samples will be collected in different locations close to the proposed well sites as identified during scouting (see Table 8) and the parameters tested are presented in Table 9.

Table 8 - Proposed Groundwater and Surface Water Measurement Locations

(Source: Timor Resources 2020)

No	Sampling Location
1	Aldeia Ramerlau (surface water)
2	Aldeia Baria Laran (groundwater and surface water)
3	Aldeia Sessurai (groundwater and surface water)
4	Aldeia Colocau (groundwater)
5	Aldeia Bua Laran (Surface water)

Water samples are stored in Polyethylene bottles which are then stored in ice boxes. For certain parameters, preservatives reagents are added.

Table 9 - WHO/Ministry of Health Timor-Leste Water Quality Guidelines

No	Parameters	Unit	Method of testing	WHO Timor Leste Guideline
Physical test				
1	pH value	-	Ph meter	6.5-8.5
2	E.Conductivity	(us/cm)	Conductivity Meter	100 µs – 1ms/cm
3	TSS	mg/L	NS	
4	TDS	mg/L	1000	1000
5	Salinity	%	NS	
6	Temperature		NS	
7	Turbidity	NTU	5 (NTU)	5 (NTU)
Chemical test				
1	NH_3-N	mg/L	Spectrophotometer	1.5
2	NO_3-N	mg/L	Spectrophotometer	50
3	NO_2-N	mg/L	Spectrophotometer	3
4	Iron (Fe)	mg/L	Spectrophotometer	0.3
5	Manganese (Mn)	mg/L	Spectrophotometer	0.5
6	Fluoride	mg/L	Spectrophotometer	1.5
7	Chloride (CI-)	mg/L	Spectrophotometer	250
8	Free Chlorine	mg/L	Spectrophotometer	5
9	Ca Hardness	mg/L	Spectrophotometer	2.5
10	Hardness Total	mg/L	Spectrophotometer	200
11	Total alkalinity	mg/L	Spectrophotometer	500
12	Sulphate (SO_4)		Spectrophotometer	250
Microbiological test				
1	Total Coliform	MPN/100 ml	Membrane filtration	0
2	E. Coli	MPN/100 ml	Membrane filtration	0

7.2.8.4 Noise

The background noise levels in the proposed drilling area will be collected to determine the baseline noise conditions. In the absence of specific noise-related legislation in Timor-Leste, the International Finance Corporation (IFC) General Guideline Environmental, Health, and Safety (IFC 2007) for Noise Level Measurement will be adopted and define the study method for assessing potential impacts of the drilling operation in Block C - see Table 10.

Table 10 - IFC Noise Level Guidelines

Noise Level Guideline		
	One Hour L_{Aeq} (dBA)	
Receptor	**Daytime 07:00 – 22:00**	**Night-time 22:00 – 07:00**
Residential: Institutional; educational	55	45
Industrial: Commercial	70	70

As stated in the Guideline, noise measurement in the proposed drilling locations will be conducted at the identified “most sensitive receptor” in proximity of the two proposed well locations. The sensitive receptor surrounding the proposed well locations identified during scouting are listed in Table 11.

Table 11 - Proposed Noise Measurement Locations

Well Sites	Location	Relevant Study area	Centroid Coordinates	
			Latitude	Longitude
Rusa	Aldeia Sessurai	School area	09º 06’31,1” S	125º 41’44,8” E
	Aldeia Fatukabelak	Resident Settlement	09º 07’ 05” S	125º 41’ 33,8 “E
	Aldeia Raimerlau	Resident Settlement	09º 06 ’52.5” S	125º 41” 00” E
Kameli	Aldeia Uma Ferik	School area	09º 06 ’43 50,2” S	125º 53’ 50,2” E
	Aldeia Baria Laran	Resident Settlement	09º 06’ 07,4” S	125 º 44’ 18,8” E
	Adeia Colocau	Resident Settlement	09º 07’08,5” S	125º 55’13,8” E

7.2.8.5 Air Quality

The baseline information on air quality will be collected to understand the existing air quality condition and will be related to the secondary data sources as identified in Section 7.2.6 and 7.5 and will relate specifically to the potential impacts of dust and particulates. The samples of air quality will be collected in the same locations as noise i.e. the most sensitive receptors. Other WHO air quality indicators as shown in Table 12 will be calculated using accepted emission factors related to diesel generators and vehicle emissions, with the exception of ozone which is not considered a potential impact related to diesel engine emissions.

Currently, the Timor Leste Government does not have specific regulation regarding air quality assessment, therefore, the WHO Ambient Air Quality Guidelines (WHO 2005) will be adopted the assessment criteria for air quality.

Table 12 - Ambient Air Quality Assessment Criteria

WHO Ambient Air Quality Guidelines		
	Averaging Period	**Guideline value in µg/m^3**
Sulphur dioxide	24-hour	20 µg/m^3
	10 minutes	500 µg/m^3
Nitrogen dioxide (NO_2)	1-year	40 µg/m^3
	1- hour	200 µg/m^3
Particulate Matter PM_{10}	1-year	20 µg/m^3
	24-hour	50 µg/m^3
Particulate Matter $PM_{2.5}$	1-year	10 µg/m^3
	24-hour	25 µg/m^3
Ozone	8-hour daily maximum	100 µg/m^3

The baseline data will be collected and analysed by identified and experienced local laboratory in accordance with internationally recognised standard.

7.2.8.6 Biodiversity

Land Use: Secondary data obtained during the seismic survey in 2019 and other local sources.

Flora and Fauna: Flora and fauna data will be collected by site survey using the Transect method.

Aquatic biota: Observation of aquatic biota will depend on any potential water sources impact around the well site, if any.

7.2.8.1 Social-Economic, Cultural and Public Health

Secondary data will be collected to include the immediate population. The data will be collected from the General Directorate of Statistics of Timor – Leste. Moreover, the study of the heritage and cultural component will be carried out mainly on settlements around the proposed project area namely: in the sucos of Uma Berloic and Foho Ailico. The primary data will be collected through field observation and interviews with community leaders representing affected sucos.

Primary data will be collected by field survey through interview and dialogue with community, leaders, government and so on. Secondary data will be accessed from government and public sources.

7.2.8.2 Aesthetic and Visual Resources

Baseline panoramic views of each site will be recorded and updated before, during and after completion of the drilling programme. The initial record will commence once the final locations are approved and the site benchmark survey completed.

7.2.8.3 Method of Data Analysis

Data presentation and analysis will include: table, graphic, maps, diagram, and statistical analyses as appropriate.

7.3 Analysis of Alternatives

Viable alternatives that can be considered are often limited because of technical requirements for the drilling programme, typically the need to locate a well above or near the target hydrocarbon reservoir, the requirement to use specific types of equipment (e.g. drilling rig specification), materials (e.g. drilling fluids) and techniques based on the subsurface geology, and the requirement to select and schedule the drill rig in advance.

Analysis of alternatives for the project are simple, either **"No Project" Alternative**, that is, don't drill at all, or proceed after considering alternative methodologies, as described below, and assessment of potential impacts and identification appropriate mitigation, as required. The alternatives considered for the TL-OT-17-09 BLOCK C Project are described here and summarised in Table 13.

7.3.1 "No Project" Alternative

"**No Project" Alternative**: would mean that no drilling would be performed in this block which would preclude any possible future contribution to the growth of Timor-Leste's economy. The country will have fewer opportunities for oil/gas supply to the domestic market and for export and less economic growth. It could lead to less employment and secondary business opportunities.

The oil and gas sector accounts for 36% of the country's GDP, 98% of exports and 41% of total imports in 2017. However, production has been decreasing since 2012 and continues to decline, with a year-on-year fall in production in 2017 of 15 percent. Petroleum production levels in 2012 averaged 202,500 barrels of oil equivalent per day (BOE/d), but in 2017 production was down to 114,000 BOE/d and by 2019 to 104,000 BOE/d.

Whilst the government continues efforts to diversify the economy, the ongoing development of the oil and gas sector is seen as one of the pillars of future economic development. The award of the TL-OT-17-09 BLOCK C PSC to Timor Resources is seen as a crucial step for the future, since the area has been considered highly prospective for many years. The exploration activities are welcomed by the Government and any significant oil discovery could provide a long-awaited windfall for the benefit of the nation. The project therefore will potentially play an important part in the country's future development, particularly in the Manufahi area. Major benefits

from a successful exploration drilling project could include increased employment opportunities for local communities both direct and indirect, improvement in livelihood of the communities, and increased revenue for the area.

Exploration drilling, following on from the seismic survey conducted in 2019, is a necessary next step to a potential discovery and development of a commercial hydrocarbon reserve. The project activities may potentially cause impacts to the local communities and the surrounding environment however, these are expected to be limited in space and time and will be eliminated or minimised in through the EMP. The "No project" option precludes the proving of any prospects identified in the seismic survey.

The "No Project" alternative for this project is not being considered further.

7.3.2 Well Location

The decision to drill vertical boreholes was made and approved early in the Block A programme in order to avoid unnecessary operational risk and reduce cost, and hence, the rig specification was selected accordingly. The Block C programme follows directly on from the Block A programme, "back-to-back" and the rig is again only capable of meeting the straight, vertical borehole requirements, thus limiting the choice of the surface location. The surface location selection is a function of reaching the optimum bottom hole target and considering any sensitive issues at the surface location.

For the locations identified, full consideration will be given to environmental, social, cultural and economic issues.

7.3.3 Water Consumption

Water consumption during the drilling campaign will be considered under the following categories:

- Potable (Drinking water) – conforming to health standards
- Drilling fluid water – analysed and consistent physical and chemical properties
- General use (e.g. cleaning, dust suppression)
- Supply – reliability, drawdown of existing supply, effect on community supply

A detailed review of options and alternatives will be included in the EIA.

7.3.4 Power Supply

It is proposed that the operation will employ its own power generation. During the 2019 geophysical operations, it was observed that the local power grid has fluctuations in voltage and frequency that exceed the capacity of the sensitive electrical equipment that will be employed. Should the local power grid be used it would necessitate the installation of significant modulation equipment. The rig power supply will be by diesel generators. The main accommodation camp at Betano will utilise the mains supply to limit emissions, however, an emergency diesel generator will be located at the camp.

7.3.5 Waste Management - Cuttings Disposal

The preferred disposal option is to dispose of the dewatered cuttings by encapsulation in the onsite pit, sealed with HDPE liner and covered with a minimum 1m of consolidated soil. If the decision is made that the cuttings and or cement cannot be encapsulated onsite then the option to dispose of at the municipal waste facility may be considered. The final disposal of cuttings and other waste will be assessed fully in the in the EIA, and a detailed Waste Management Plan will be prepared as part of the Environmental Management Plan (EMP).

7.3.6 Drilling Fluid (Mud) Alternatives

There are two main types of drilling mud used in various drilling operations: water-based, and non-aqueous drilling fluids (NADF), the latter are made using either a hydrocarbon base oil or a synthetic base oil. Oil based NADF pose a potential impact to the environment since they contain hydrocarbon derived elements, whilst synthetic NADF use non-hydrocarbon oil base typically mineral oils, hence, reducing potential impact. On the other hand, water-based muds eliminate the need to use any oil-based fluid.

Water-based muds will be utilised on all wells and the constituents of the mud have been selected to minimise any toxic components, with the sole exception of biocide, which is used in minimal amounts. Whilst some individual components pose limited safety hazards, (two components are caustic and will be treated as hazardous materials), the “whole mud” when made up is non-toxic and does not pose a potential environmental impact, it is selected as the environmentally preferable option.

Table 13 - Alternatives

Issue	Alternatives	Selected Alternative
Project	• Proceed with project • No Project	• Proceed with project
Well site location	• Ability to change location limited by bottom target and rig capability. Limited relocation is possible	• Limited changes determined by local impacts and requirements to relocate
Water	• Closest river/creek • Trucking from an existing well. • It may be possible to use sea water. • If none of the above then drilling a water well.	• Trucking from an existing water well
Power	• Mains supply • Diesel Generator on site	• Rig - Diesel Generator on site • Camp - Mains, diesel generator back up.
Waste Management - Cuttings Disposal	• Onsite burial • Remove to authorised Landfill	• Onsite burial • Detailed Waste Management Plan as part of EMP
Drilling Fluids (Mud)	• Water-based mud • Oil based mud • Synthetic based mud	• Water-based mud Selected

7.4 Determination of the Potential Impacts of the Proposed Project

The structure of the EIA shall comply with Ministerial Diploma 46/2017 Annex IV, and a flow chart of the process is shown in Figure 2 and summarised in Figure 24.

The EIA is conducted in three stages:

1. Identification of potential impacts;
2. Evaluation and significance of potential impacts;
3. Classification and priorities

Identification of potential impacts aims to determine all impacts that may arise as a result of interactions between the project activities and environmental components or aspects, a preliminary assessment is presented in Table 13. Identification of the potential impacts is addressed through consultation and discussion with experts, each member of the EIA team, related government agencies, interested communities, study of similar activities, literature and also, as required, from field baseline data collection.

The likely effects of each project activity on the environment shall be identified and described. Direct, indirect, short, medium and long term, positive and negative effects shall be covered. The assessment will then focus on key issues, a process referred to as scoping. The scale and significance of potential impacts shall be predicted.

Once the impacts have been identified and their scale assessed then the significance of the effects on the environment and the local populations can be evaluated. This usually involves reference to accepted criteria or standards for health, nuisance, or acceptability in a more general way. For impacts such as noise and some atmospheric emissions such as particulates, acceptable standards are widely recognised, for example in IFC Guidance (IFC 2007). For other impacts such social, economic, cultural, such as landscape quality, the assessment will be based on agreed professional subjective judgement and acceptability related to current social and cultural factors and not to any scientific analysis.

The measured impact and assessment of its significance will usually indicate the need for measures to mitigate harmful effects. Such measures may involve specification of equipment performance; preparation of policies and procedures; alternative technologies; limited options regarding location of the drilling site; use of alternative chemicals or materials; waste recovery; and contingency planning.

An Environmental Management Plan for construction, operations and decommissioning phases shall be devised. This will include requirements for monitoring, auditing, compliance, and contingency planning, and site restoration following decommissioning and abandonment.

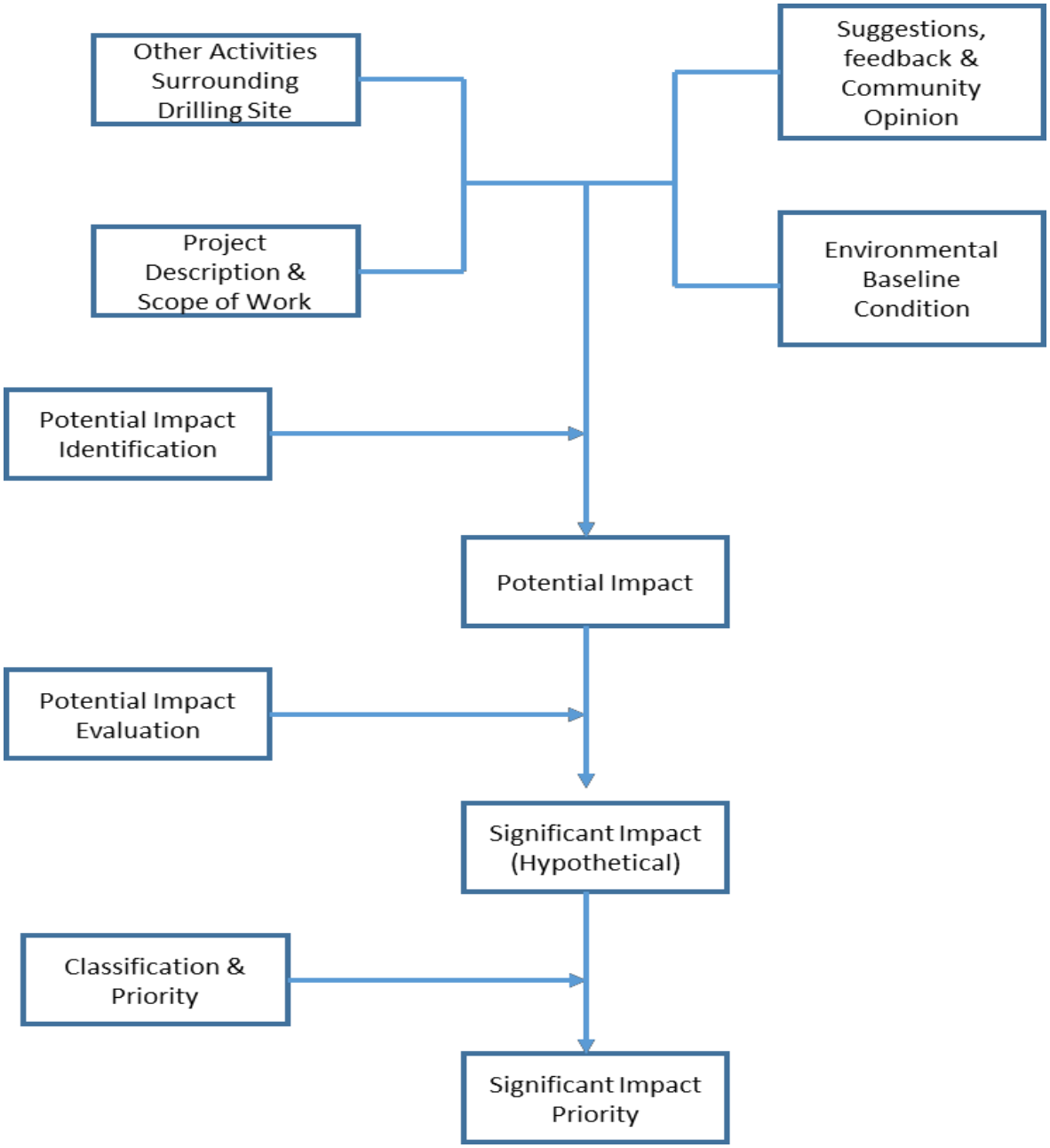

Figure 24 - EIA Impact Flow Chart

Table 14 - Activities v Aspects Potential Impact Matrix

PROJECT ACTIVITES			PRE-OPERATION CONSTRUCTION					OPERATION			DECOMISSIONING
ENVIRONMENTAL COMPONENT/PARAMETER			Permit, License, & Engineering	Land Acquisition	Employment	Land Clearing & Preparation	Mobilisation /Rig Move	Rig Up & Setting Equipment	Drilling	Well Testing	Rig Down/Rig Move/Demobilisation
Physical and Chemical Components	Air and Noise	SO_2				•	•		•	•	•
		NO_2				•	•		•	•	•
		Particulate Matter PM_{10}				•	•		•	•	•
		Particulate Matter $PM_{2.5}$				•	•		•	•	•
		Noise				•	•	•	•	•	•

PROJECT ACTIVITES			PRE-OPERATION CONSTRUCTION					OPERATION			DECOMISSIONING
ENVIRONMENTAL COMPONENT/PARAMETER			Permit, License, & Engineering	Land Acquisition	Employment	Land Clearing & Preparation	Mobilisation /Rig Move	Rig Up & Setting Equipment	Drilling	Well Testing	Rig Down/Rig Move/Demobilisation
Physical and Chemical Components	Water Quality	pH				•			•		
		TSS				•			•		
		TDS				•			•		
		Turbidity				•			•		
		NH_3-N/NO_3-N/NO_2-N				•			•		
		Iron							•		
		Manganese							•		
		Arsenic							•		
		Oil and Grease				•	•	•	•	•	

PROJECT ACTIVITES			PRE-OPERATION CONSTRUCTION					OPERATION			DECOMISSIONING
ENVIRONMENTAL COMPONENT/PARAMETER			Permit, License, & Engineering	Land Acquisition	Employment	Land Clearing & Preparation	Mobilisation /Rig Move	Rig Up & Setting Equipment	Drilling	Well Testing	Rig Down/Rig Move/Demobilisation
Physical and Chemical Components	Soil	Moisture				•			•	•	
		Sunlight				•			•	•	
		Soil Temperature				•			•	•	
		Soil pH				•			•	•	
		Nitrogen (N)				•			•	•	
		Phosphorus (P)				•			•	•	
		Potassium (K)				•			•	•	
		Soil Composition (HCL)				•			•	•	
		Oil and Grease				•	•	•	•	•	

PROJECT ACTIVITES			PRE-OPERATION CONSTRUCTION					OPERATION			DECOMISSIONING
ENVIRONMENTAL COMPONENT/PARAMETER			Permit, License, & Engineering	Land Acquisition	Employment	Land Clearing & Preparation	Mobilisation /Rig Move	Rig Up & Setting Equipment	Drilling	Well Testing	Rig Down/Rig Move/Demobilisation
Biological Component or Biodiversity	Flora & Fauna	Vegetation clearance				•					
		Habitat Destruction				•					
		Transit Corridor Changes	•	•		•	•				•
		Migration routes				•			•	•	
		Abundance				•			•	•	

PROJECT ACTIVITES			PRE-OPERATION CONSTRUCTION					OPERATION			DECOMISSIONING
ENVIRONMENTAL COMPONENT/PARAMETER			Permit, License, & Engineering	Land Acquisition	Employment	Land Clearing & Preparation	Mobilisation /Rig Move	Rig Up & Setting Equipment	Drilling	Well Testing	Rig Down/Rig Move/Demobilisation
Social, Economic, Cultural and Public Health Component	Socio-Economic	Employment			•	•	•	•	•		•
		Income / business opportunity		•	•	•	•	•	•		•
		Cultural Heritage & Concern		•	•	•	•	•	•	•	•
		Loss or reduction in livelihoods		•	•	•	•	•	•		•
	Socio-Cultural	Social Jealousy	•	•	•	•	•	•	•		•
		Public Complaints	•	•	•	•	•	•	•	•	•
	Transportation	Traffic Disruption				•	•	•	•		•

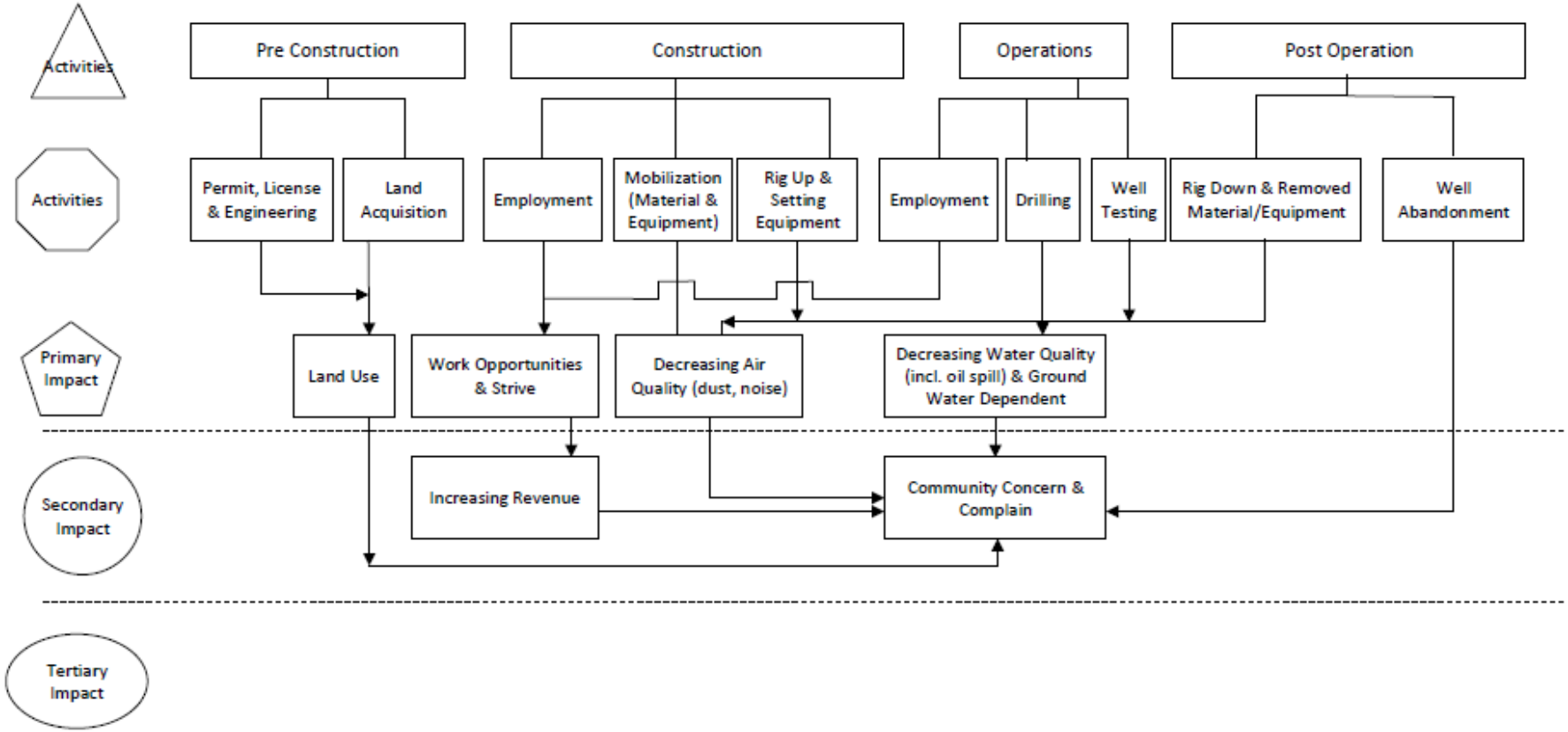

Figure 25 - Activity/Impact Overview

The Environmental Impact Statement will identify and report on potential impacts of the Block C drilling campaign on various environmental aspects, at different stages of proposed project. It will examine the most likely effects arising from the project and determines potential impacts on the environment.

This element of the TOR aims to distinguish between various impacts, as outlined in Annex III Ministerial Diploma 46/2017, for example:

- Beneficial (positive) and adverse (negative) impact
- Direct and indirect impact
- Short, medium and long term impact
- Cumulative impact
- Transboundary impacts, if applicable, including impacts of climate change
- Impacts that are unavoidable or irreversible.

Impacts will be addressed in accordance with the different phases of the project:

- Pre-Operation/Construction phase involves completion of all legal formalities Category A requirements from ANPM, drilling studies required, finalisation of Public Consultation on the proposed well location, procurement of rig/machinery, long lead items, manpower and other facilities such water supply and waste management
- Operation phase shall comprise of land drilling process
- Decommissioning phase will be guided by rehabilitation of the drilling site including revegetation and/or agreed after use.

The potential impacts will be addressed, but not necessarily limited to, the following environmental and social aspects:

Environmental

1) Decreasing Air quality – construction and operation, principally dust and generator and vehicle emissions
2) Noise - increasing noisy condition during construction and operation phase; drilling activities, increased traffic along the main road – predicted noise levels compared to existing background levels
3) Water quality potential degradation but ground water dependent – changes pH, ammonia, sedimentation and other parameters also ground water dependent
4) Land use change – conversion of public and private land uses into drilling site, facilities, areas, current land use and cover

5) Habitat destruction/degradation and biodiversity loss
6) Solid waste - solid waste management, garbage from rig and camp
7) Wastewater and stormwater – sewage treatment; wash water; rain water; hazardous material spills;

Social and Economic

1) Land acquisition and physical displacement – number of households and people affected, land types and areas acquired, etc.
2) Economic displacement and livelihoods – local businesses and employment
3) Loss of cultural heritage sites – types and significance of sites
4) Safety - worker and community safety pre-operation during construction, operation and decommissioning
5) Traffic – during construction and operation, primarily between Suai and the drilling site
6) Employment- increased employment opportunities, and increased support services opportunities, e.g. shops and transport services.

7.5 Assessment & Evaluation

The study begins with a review of the existing environment in the area around the drilling location. The review will rely principally on secondary data abstracted from available government and public records and in the literature, for example, the Suai Supply Base Project EIA (Worley Parsons 2015) and the Betano Refinery and LNG Project EIA (Worley Parsons 2015). To supplement the environmental review primary information will be collected, as required, in the area around the drilling location, typically 5-10km^2, depending on the identified receptors.

The impact assessment will commence by defining the:

- Scope of the work
- Type of information to collect
- The collection procedure
- The time periods
- Required personnel (both quantity and expertise level),
- Sampling methodologies and instrumentation
- The test/laboratory agencies
- Legislation and standards

7.5.1 Types of Impacts and Definitions

An impact is any change to a resource or receptor brought about by the presence of a project component or by the execution of a project related activity. The evaluation of baseline data provides crucial information for the process of evaluating and describing how the project could affect the biophysical and socio-economic environment. Table 15 describes Impacts according to their nature or type.

Table 15 - Impact Nature and Type

Nature or Type	Definition
Positive	Impact that is of benefit to the receiving environment
Neutral	Impact that has No Cost or benefit to the receiving environment
Negative	Impact that is a considered to represent an adverse change or introduces a new undesirable factor; A cost to the receiving environment
Direct	Impact that results from a direct interaction between a planned project activity and the receiving environment
Indirect	Impact that results from other activities that are encouraged to happen as a consequence of the project activity

7.5.2 Impact Significance

Impacts are described in terms of "*significance*". Significance is a function of the magnitude, severity or consequence of the impact and the likelihood of the impact occurring. The impact is a function of the extent, duration, and intensity of the impact. The criteria used to determine significance are summarised in the Table 16 below. Once an assessment is made of the magnitude and likelihood, the impact significance is rated through a matrix process as shown in Table 16, Table 17 and Table 18 below.

7.5.3 Mitigation Measures and Residual Impacts

In developing the mitigation measures, the EIA team relied upon on the internationally applied methodology that included lessons learnt from previous studies and the best practices such as the IFC/World Bank general EHS Guidelines and from the insight gained during fieldwork and stakeholder engagement exercise.

For activities with significant impacts, the EIA process is required to identify suitable and practical mitigation measures that can be implemented, and this is achieved through the implementation of the EMP. Finally, the impacts were re-evaluated assuming the appropriate mitigation measures are effectively applied, and this resulted in a significance rating for the residual impact under the EMP.

Table 16 - Significance Criteria

Impact	Magnitude/Severity/Consequence
Extent	**Site-Specific:** Impact that are limited to the boundaries of the project site **Local:** Impacts that extends beyond the site boundary; affects the immediate surrounding environment (i.e. up to 5km from Project Site Boundary) **Regional:** Impact that extends far beyond the site boundary; widespread effect (i.e. 5km and more from the Project Site Boundary) **National and/or international:** Impact that extends far beyond the site boundary; widespread effect
Duration	**Short-term:** Impact that is quickly reversible; 0-5 years **Medium term:** Impact that is reversible over time; 5-15 years **Long-term:** Impact that lasts 16-30 years **Permanent:** Impacts that last over 30 years and resulting in a permanent and lasting change that will remain
Intensity	**None:** The impact on the environment is not detectable **Low:** The impact affects the environment in such a way that natural functions and processes are not affected **Medium:** Where the affected environment is altered but natural functions and processes continue, albeit in a modified way **High:** Where natural functions or processes are altered to the extent that they will temporary or permanently cease. Where the affected environment is permanently altered

Impact	Time Scale of Impact - Likelihood
Likelihood	**Improbable:** Possibility of the impact materializing is negligible; chance of occurrence <10% **Probable:** Possibility that the impact will materialize is likely; chance of occurrence 10-49% **Highly Probable:** It is expected that the impact will occur, chance of occurrence50-90% **Definite:** Impact will occur regardless of any prevention measures, chance of occurrence >90%

Table 17 - Significance Rating Matrix

SIGNIFICANCE			
Extent/Duration/Intensity	LIKELIHOOD		
	Probable	Highly Probable	Definite
Site Specific/Short-term/ None	Negligible	Negligible	Minor
Local/Medium Term/ Low	Negligible	Minor	Minor
Regional/Long Term/ Medium	Minor	Moderate	Moderate
National/Permanent/ High	Moderate	Major	Major

Table 18 - Ecological Significance

ECOLOGICAL SIGNIFICANCE CRITERIA	CATEGORY
Major, significant adverse changes in an ecosystem. Changes are well outside the range of natural variation and unassisted recovery could be protracted.	Major
Moderate adverse changes in an ecosystem. Changes may exceed the range of natural variation. Potential for recovery within several years without intervention is good; however, it is recognised that a low level of impact may remain.	Moderate
Minor adverse changes in an ecosystem. Changes might be noticeable but fall within the range of normal variation. Effects are short-lived, with unassisted recovery occurring in the near term; however, it is recognised that a low level of impact may remain.	Minor
Changes in ecosystems that are unlikely to be noticeable (i.e., well within the scope of natural variation).	Negligible
Changes resulting in positive, desirable, or beneficial effects on an ecosystem.	Beneficial

7.6 Environmental Management Plan (EMP) Performance

The measured impact and assessment of significance will usually indicate the need to mitigate harmful effects. Such measures may involve specification of equipment performance; preparation of policies and procedures; alternative technologies; alternative sites; use of alternative chemicals or materials; waste recovery; and contingency planning. See examples in Table 16.

An Environmental Management Plan for construction, operations and decommissioning phases will be devised to describe the actions necessary to implement these the mitigation measures. This will include requirements for monitoring, auditing, compliance,

contingency planning, and site restoration following decommissioning for agreed after use or rehabilitation.

The EIA and EMP will provide:

- Coverage from start of project through operations to decommissioning
- Assessment of social, cultural and economic factors in addition to environmental aspects
- Listing the impacts, the significance of each impact, the mitigation measures to eliminate, reduce, minimise or to compensate for impacts
- Monitoring requirements, e.g. methodology, locations, frequencies and responsibilities
- Estimated costs of the mitigation measures
- Types of reports and persons responsible for the reports
- Training needs to build local competency in environmental management
- Continuous improvement of environmental management actions.

Table 19 - EMP Considerations

NO	ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES ENVIRONMENTAL MANAGEMEN PLAN
POSITIVE IMPACTS			
1	**Employment Local goods and services**	Potential short-term employment opportunities, and increased support services opportunities, e.g. supplies and transport services. Potential Impacts to cultural heritage, and community cultural sites	• Maximise the number of local people to be recruited where possible • Use local vendor as supplier • Increase local content
NEGATIVE IMPACTS			
2	**Land Use**	Loss of access to land/income/agriculture	• Public hearing & public consultation • Socialisation to the community & close work with Government • Select previously disturbed land • Compensation • Rehabilitation or agreed after use
3	**Traffic**	Increased truck movements, personnel movements and increased vehicles and motorcycles on local roads	• Employ speed limit • Install warning signs along the road • Guard officer & Security Man provided • Vehicle movement minimised
4	**Soil**	Removal of vegetation, topsoil, erosion	• Manage run off • Store topsoil for use in rehabilitation • Rehabilitation

NO	ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES ENVIRONMENTAL MANAGEMEN PLAN
5	**Air Quality**	Vehicle & plant operations & movement dust and engine emissions potentially affecting local air quality e.g. particulates $PM_{2.5}$ and PM_{10} well testing	• Employ speed limit • Install warning signs along the road • Guard officer & Security Man provided • Vehicle movement minimised • Vehicles meet emission test • Watering road surface to minimise dust
6	**Surface Water and Groundwater**	Drilling operation, drilling waste (wastewater, muds, cuttings, cement), household/camp waste, well testing	• Site perimeter drainage • Develop lined/concreted drilling waste pit • Implement drilling waste management by reused & recycle as per plan • Use nontoxic & friendly chemical • Identify aquifers
7	**Operational Leaks and Spills**	Potential increased contamination to soil, surface and ground water, vegetation, flora and fauna, and aquatic life	• Rig design oily drains • Proper storage for chemicals • Spill Contingency Plan
8	**Worst Case Oil Spill**	Well blow out, fire, community evacuation and another emergency situation	• Implement drilling safety (equipment, personnel & procedures) such BOP, well integrity, inspection and maintenance • Implement best practices • Emergency Response Plan • Conduct drill & table top exercise
9	**Water Supply**	Reduction of supply for local community	• Ensure no water use competition with local community • Procure high yield sources
10	**Flora Fauna and Habitat. Biodiversity**	Vegetation clearing, habitat destruction	• Minimum land take and land clearing • Lighting designed to minimise disturbance to wildlife • Rehabilitation or agreed after use
11	**Liquid Effluents**	Contamination off site - water sources/groundwater/soils	• Sewage treatment on site no discharges offsite • Rig oily drainage • Perimeter drain with interceptor • Well testing collect produced water
12	**Solid Wastes**	Increase in waste materials generated, location of disposal of waste material	• Waste management plan approved by municipality
13	**Noise**	Vehicle and plant noise	• Employ speed limit rule • Brief local community • Grievance Redress Plan • Movement at night prohibited • Implement journey management plan
14	**Community**	Cultural Heritage & Concern, potential loss or reduction in livelihoods, Social Jealousy, Public Complaint	• Consultation with communities and local administrations • Robust two way communications • Awareness of risks and emergency procedures

7.7 Public Consultation

Comprehensive stakeholder engagement will be undertaken by the EIA team during the preparation of the EIA in accordance with Decree Law 5/2011 and relevant IFC Guidelines commensurate with Project risks and impacts.

This will build upon the previous engagement activities prior to and during the 2019 seismic survey, learning lessons from the effectiveness of this with different stakeholder groups, to focus on the detailed project design and EIA preparation phases. As such, TR will coordinate its activities with those of GoTL to ensure that the process continues in a structured manner, with both parties contributing to the activities as required.

Public consultations will be undertaken by Timor Resources after the TOR public announcement. Participants will include municipal and district heads as well as a cross section of stakeholder groups: government agencies, local people, local businesses, NGOs, and academics. Major issues discussed will be included in the implementation of EIA, the coordination with relevant authorities, impacts of the project on local communities, interests of local communities, stakeholders, during all stages of the project. The socialisation will be conducted by Timor Resources with the local affected people in and around the immediate area from Same south to Betano. Informal interviews of local people around the proposed drilling rig site(s) will be conducted. The project will also be announced and published in the local and national newspapers.

Key elements of stakeholder engagement during EIA preparation will include:

1. Systematic identification of project stakeholders and their interests
2. Review of regulatory requirements for stakeholder engagement
3. Seeking input from stakeholders on how they wish to be consulted
4. Preparation of a stakeholder engagement plan commensurate with potential impacts
5. Provision of information ahead of consultations
6. Using consultation to enhance mitigation and agree compensation and benefits
7. Maintaining involvement with government-led consultation
8. Reporting changes in the evolving project design to stakeholders on a regular basis
9. Documenting the process and results of consultation

10. Integrating stakeholder information across the project planning functions.

TR will prepare a Stakeholder Engagement Plan that covers the above elements and how stakeholder engagement activities will be integrated into the Operating Management System. Engagement will primarily:

- Gather baseline information and discuss mitigation, compensation and benefits (livelihood restoration, land use planning and other project mitigation measures);
- Keep people informed about Project developments; and
- Respond to issues as they arise. Engagement will also involve the broader community, Government agencies and NGOs

8 FLEXIBILITY

The EIA study area, project alternatives and impact issues being assessed may be subject to change as the EIA process proceeds and new information is obtained. Where this occurs the TOR of the EIA and the EMP will be expanded to ensure that these new issues are adequately covered.

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