1 INTRODUCTION

1.1 General

This introduction to the East African Crude Oil Pipeline (EACOP) project environmental impact statement (EIS) describes the following:

- project purpose and need
- project overview:
  - EACOP System
  - EACOP Uganda
- developer contact information
- EIS overview
- EIS structure.

1.2 Purpose and Need for Project

The purpose and the need for the EACOP project is, with due consideration to the management of associated environmental and social impacts, to enable crude oil produced from the Lake Albert development area to be transported to the coast of Tanzania and exported to international markets, net of Uganda supply commitments. In addition, the construction and operation of the pipeline will:

- contribute to the economy
- provide business opportunities for different sectors of the economy
- provide approximately 3 years of employment opportunities for highly and semi-skilled workers and labourers during construction and 25 years for highly skilled workers during operational phases.

1.3 Project Overview

1.3.1 EACOP System

Total E&P, Uganda BV (TEPU), Tullow Uganda Operations Pty Ltd (TUOP) and CNOOC Uganda Limited (CUL) (“UPSTREAM PARTNERS”) hold interests in petroleum resource licences near Lake Albert.

The production licences held by the UPSTREAM PARTNERS include the following:

- Tilenga (Buliisa and Nwoya) contract area (CA-1 and northern portion of LA-2)
- the Kingfisher Development Area (KFDA) on the southeast shoreline of Lake Albert
- the Kaiso Tonya licence area (LA-2) on the central part of the east shoreline of Lake Albert.

The crude oil produced from those areas (CA-1, LA-2 and KFDA) will be stabilised at their respective central production facilities (CPFs) and transported via feeder pipelines to the Delivery Point. The Delivery Point, EACOP pumping station (PS1)

and a refinery will be in the future Kabaale Oil and Gas Industrial Park, in Hoima district.

The UPSTREAM PARTNERS, Uganda National Oil Company and the Tanzania Petroleum Development Corporation will be shareholders in a pipeline company that will develop, construct and operate a pipeline to export the Lake Albert area crude oil reserves to international markets, net of supply commitments to the planned refinery at Kabaale, Uganda. Total East Africa Midstream (TEAM) BV is the developer of the project.

Figure 1.3-1 is a map of the upstream areas, the CPFs, their respective feeder lines, and the refinery, collectively referred to as the Lake Albert Development Area.

The export pipeline, also known as the EACOP System, is defined in the Inter-Governmental Agreement signed by Government of Uganda and Government of Tanzania on 26 May 2017. The EACOP System means the petroleum export pipeline system intended to traverse from the inlet flange at the Kabaale pumping station (PS1), in Hoima district, Uganda, to an export flange at a proposed marine storage terminal (MST) at Chongoleani, Tanga district, on the East African coast of Tanzania. The system will include:

- 1443 km of insulated, electric heat-traced, buried 24-in. pipeline
- aboveground installations:
  - six pumping stations to provide the pressure for crude oil flow at the production rate of 216 kbopd
  - electric heat trace stations
  - block valves
  - two pressure reduction stations on the pipeline, and a pressure reduction system at the MST, to ensure the maximum allowable operating pressure is not exceeded upon arrival at the crude oil storage tanks
  - the MST, which includes storage tanks and load-out facility (LOF) comprising a trestle and loading
- facility access roads.

Figure 1.3-2 is a map of the EACOP System.

1.3.2 EACOP Uganda

In Uganda, the EACOP project comprises the following components:

- 296 km of insulated, electrical heat-traced, buried 24-in. pipeline
- aboveground installations:
  - two pumping stations (PS1 and PS2)
  - main line block valve stations and electric heat trace substations
- roads:
  - new and upgraded permanent access roads
  - new and upgraded construction facility access roads
- four main camps and pipe yards (MCPY1 through to MCPY4) for the construction phase.

The project description for EACOP Uganda, including maps, is included in Section 2.

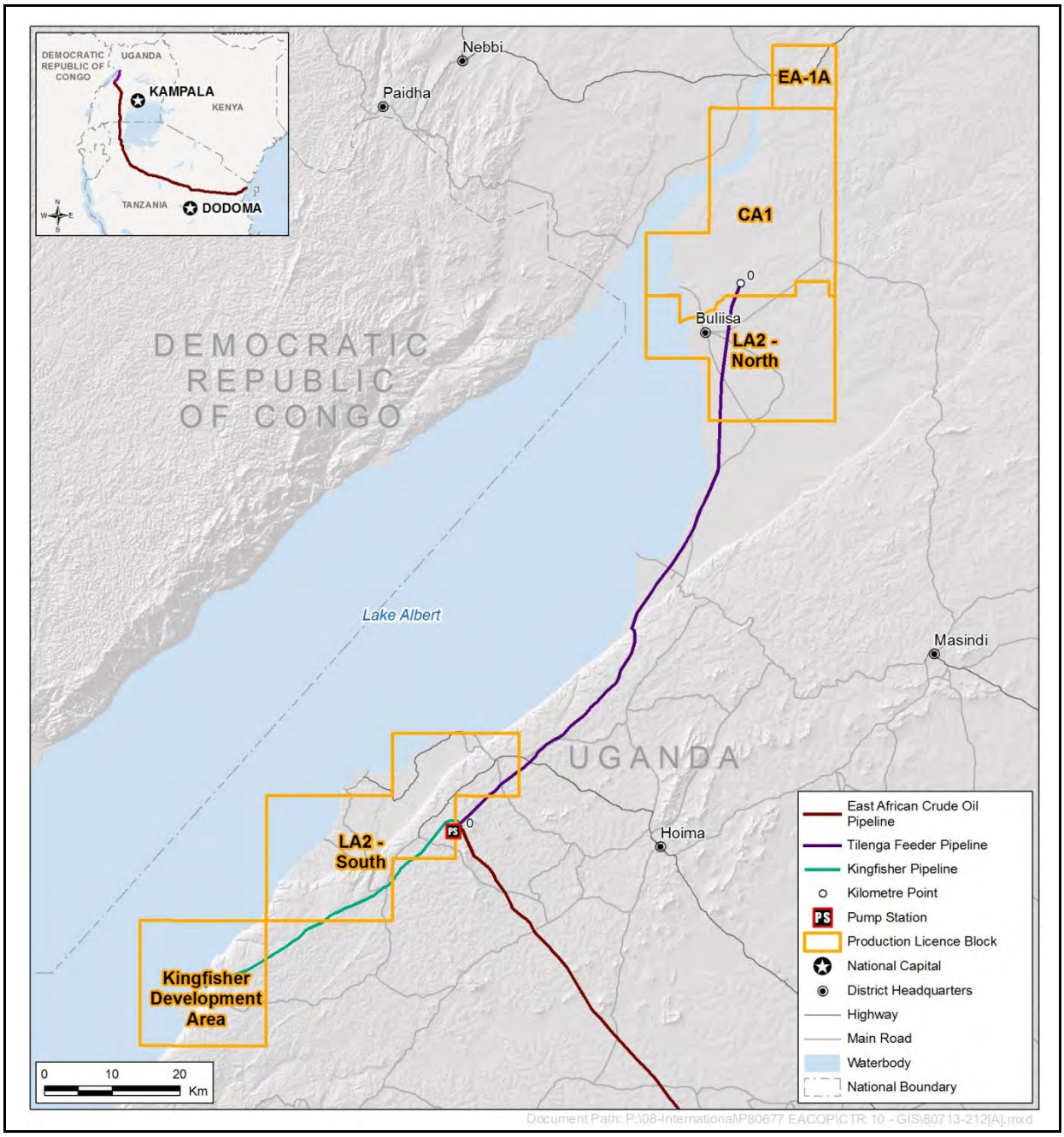

Figure 1.3-1 Lake Albert Development Area

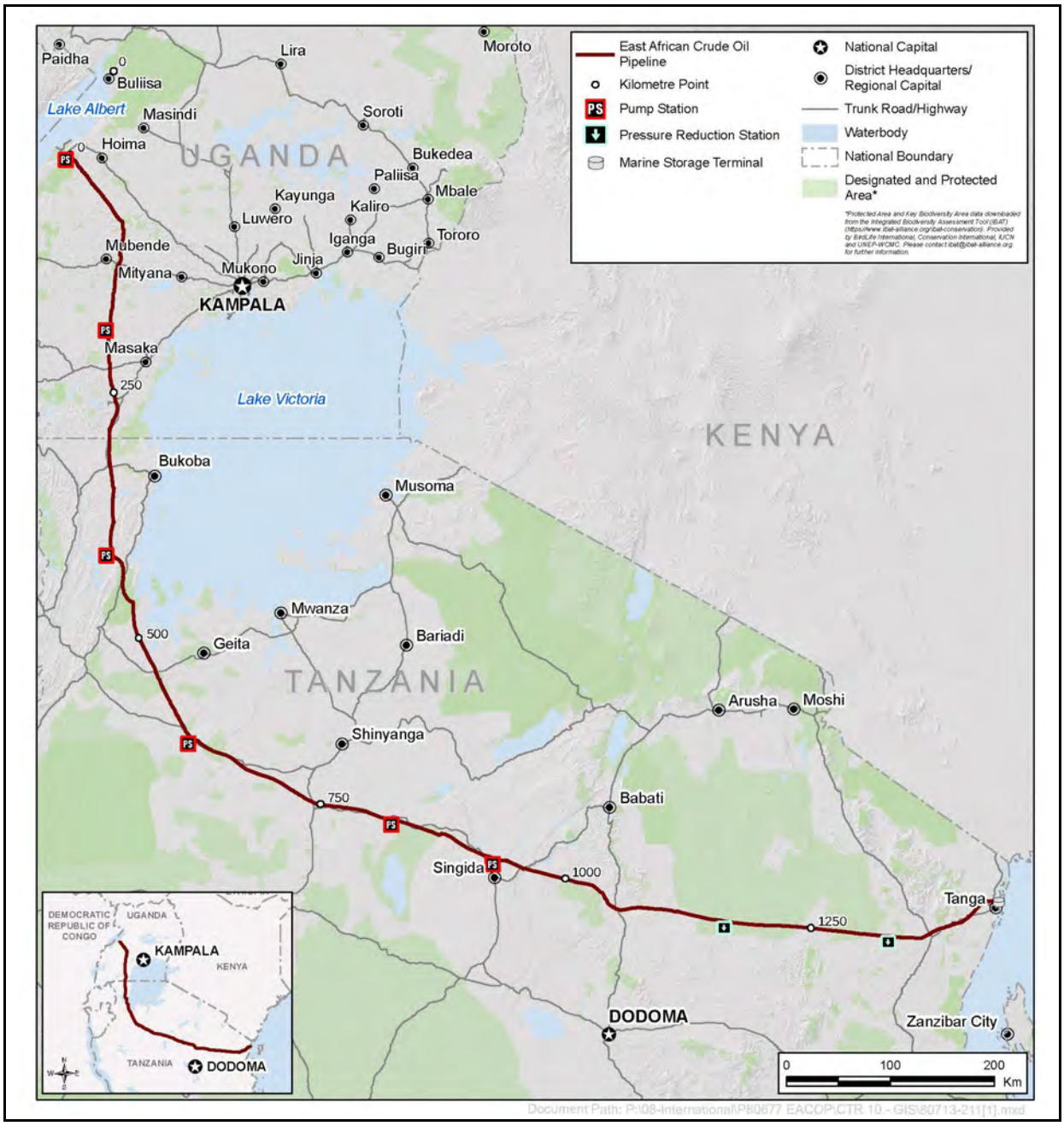

Figure 1.3-2 EACOP System

1.3.3 Developer Contact Information

The developer of the EACOP is Total East Africa Midstream (TEAM) BV. Table 1.3-1 provides the Uganda contact information of the project developer.

Table 1.3-1 Contact Information

Name of Developer	Address	Named Key Contact	Telephone
Total East Africa Midstream BV	Course View Towers, Plot 21 Yusuf Lule Road, Kampala, Uganda	Maxime Marchenko	+256 204 916 000

1.4 Environmental Impact Statement Overview

1.4.1 Purpose

This EIS is a report of the environmental and social impact assessment conducted to identify, describe and assess the likely interactions of the EACOP project in Uganda with environmental and socio-economic receptors, termed as the “valued environmental and social components” (VECs). The phrase, environmental and social impact assessment (ESIA), will be used interchangeably for both EIS and environmental impact assessment in this report.

The objective of the ESIA is to document the:

- potential impacts of the project on the physical, biological and human environment
- identified mitigation measures, where necessary, to eliminate or reduce impacts through early recognition and incorporation to engineering, construction and operation
- significance of the impacts.

This ESIA has been prepared pursuant to:

- the National Environment Act, Cap 153, 1995
- the Environmental Impact Assessment Regulations,1998
- the Guidelines for Environmental Impact Assessment in Uganda, 1997
- the Environmental Impact Assessment Guidelines for the Energy Sector in Uganda, 2004 and the Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda, 2014.[1]

[1] The Environmental Impact Assessment Guidelines for the Energy Sector (NEMA 2004) encompass all types of energy projects, including oil pipelines, whereas the 2014 guidelines refer to oil only in the context of thermal generation. Nonetheless, the 2014 guidelines include text from both the 2004 guidelines and refinements, such as additional information on scoping report and ESIA format content, and hence are considered current best practice.

The impact assessment also concords with international guidance to enable the developer to apply for international funding. International guidance includes:

- the International Finance Corporation's environmental and social performance standards
- Equator Principles
- other relevant international standards and guidelines (see Section 4).

The ESIA has been conducted in accordance with the Scoping Report and terms of reference (ToR) approved by the National Environmental Management Authority (NEMA) by way of correspondence to TEAM dated 19 September 2017. The approval contained comments and recommendations, which have been addressed in this ESIA. A concordance table has been included in Appendix K.

1.4.2 Environmental and Social Impact Assessment Team

An experienced ESIA team with extensive pipeline engineering, environmental and social impact assessment knowledge was formed to prepare this ESIA, which included Ugandan partners experienced in ESIA development in the Ugandan oil and gas sector. The interdisciplinary team comprised:

- registered independent environmental and social consultants working for Eco & Partner Consult Partnership and RSK Environment Limited
- ESIA and HSE management from TEAM
- an international engineering consultancy, Gulf Interstate Engineering (GIE).

The registered and key contributing environmental and socio-economic expert members of the ESIA team are listed in Table 1.4-1.

Table 1.4-1 Registered and Key Contributing Members of the Environmental and Social Impact Assessment Team

Name	Expertise/Qualifications	Role	Registered (Signature)/Contributing
Registered EIA Practitioners			
David Taylor	BSc (Hons) Geology; MSc (by research) Marine Geology and Geophysics	ESIA oversight and coordination/team leader	
Nicola O'Donnell	BSc (Hons) Environmental Biology with a Modern Language; MSc Environmental Science	Biodiversity lead	
Peter Baur	MSc Engineering Hydrology; BSc (Hons) Geography	Hydrology lead	
Srinivas Srimath Tirumala Gudimella	BEng Civil Engineering; MEng Environmental Engineering; PhD in Air Quality Modelling and Monitoring	Climate and air quality lead	
Eddie Luyima	MSc in Environment Management; BA in Environmental Management; Dip in Env Mgt, IEMA	In-country ESIA team leader	
Amos Mafigiri	BA in Environmental Management; Cert ISO 14001	ESIA quality control	
Diana Nakalanzi	MSc in Environmental Science – Limnology and Wetland Management, BSc in Environmental Science	Water quality specialist	
Daniel Clare	BSc (Hons) Environmental Science; IOA Diploma in Acoustics and Noise Control	Environmental acoustics lead	
Francis Lugemwa	MA Sociology (Candidate); MA Land-use Planning and Regional Development; BA in Geography; Dip in EIA; IEMA	Socio-economic and stakeholder engagement in-country lead	
Eng Daka Michael	MSc Engineering; BSc Civil Engineering	Road engineer and traffic surveyor	
David Maynard	Certificate in Practical Archaeology (credit); BA Prehistory and Archaeology	Cultural heritage lead	

Table 1.4-1 Registered and Key Contributing Members of the Environmental and Social Impact Assessment Team

Contributing Specialists		
Name	**Qualification**	**Role**
Dr Lodewijk Werre	PhD Anthropology; Executive Education for Sustainability Leadership Program	Uganda EACOP project manager
Dr Hilde Van Vlaenderen	Licentiate in the Psychological and Pedagogical Sciences; PhD Psychology	Stakeholder engagement and social lead
Tom Smith	PDip Ecology and Environmental Management; BSc (Hons) Applied Ecology	Ornithology expert
Simon Boulter	BSc (Hons) Zoology; MSc Primate Conservation	Fauna expert
Joanne Nightingale	DPhil Ecology and Conservation; BSc (Hons) Environmental Biology	Botany expert
Will Hawthorne	BA (Hons) Botany; PhD Botany	Botany expert
Steven Heathcote	Botany BA (Hons) Natural Sciences; DPhil Botany	Botany expert
Dr Peter Walker	BSc (Hons) Marine and Freshwater Biology; MRes Applied Fish Biology; PhD Fish Parasitology	Aquatic biodiversity expert
Mark Olokutum	MSc Limnology and Wetland Management; MSc Zoology; BSc Fisheries & Aquaculture	Aquatic ecologist
Dr Perpetra Akite	PhD Plant Pathology; MSc in Environment and Natural Resources; BSc Botany	Invertebrate ecologist
Erin Parham	BSc Biodiversity and Conservation; BA Geographic Information Systems	Critical habitat assessment expert
Pippa Howard	BSc Marine Biology and Environmental Sciences	Critical habitat assessment expert
John Cornell	MA Geography; BSc (Hons) Ecology & Conservation	Critical habitat assessment expert
Dr Robert Kityo	PhD in Zoology; MSc and BSc in Vertebrate Ecology	Mammal specialist
Dr James Kalema	PhD in Botany; MSc Botany; BSc Botany & Zoology	Botany specialist
Prof. Derek Pomeroy	PhD in Animal Ecology; Natural Sciences Tripos (Cambridge)	Avifauna specialist
Dr Timothy Twongo	PhD in Zoology; MSc Biology; BSc Zoology & Botany	Aquatic biology expert
Dr Mathias Behangana	PhD Environment and Natural Resources; MSc Zoology; BSc Zoology	Herpetofauna specialist
Tim Newton	BSc (Hons) Zoology; MA Environmental Impact Assessment and Management	Soils and geology lead
Julius Opio	MSc Physical Land Resources – Soil Science; BSc (Hons)	Soil expert

Table 1.4-1 Registered and Key Contributing Members of the Environmental and Social Impact Assessment Team

Contributing Specialists		
Name	**Qualification**	**Role**
Syliver Wadamba	MSc in Tropical Hydrogeology; MSc in Watershed Management; BSc (Hons), Diploma in Groundwater Exploration, Exploitation & Management	Hydrology expert
Dr Hamdi Mohamed Riad El-Ghonemy	BSc Geology; MSc Hydrogeology; PhD Hydrogeology	Hydrogeology lead
Robert Naguyo	MSc in Water Resources Surveys, Groundwater; BSc Geography/Chemistry	Hydrogeology, soils and geology
Daniel Leaver	Bachelor in Landscape Design; BSc (Hons) Zoological Science	Landscape lead
Richard Appleyard	BEng (Hons) Environmental Engineering with Resource Management	Climate, air quality and best available techniques expert
Deo Okure	MSc in Energy and Environmental Management; BSc Mechanical Engineering (Hons)	Climate and air quality
Abraham Ochola	BA in Environmental Management, Cert in Oil & Gas, Cert in GIS	Noise expert
Kate Blacklock	Master's in Education and Development	
Dr Dauda Batega	PhD in Sociology; MA (Sociology); BA in Social Sciences (Hons)	Lead sociologist
Birungi Judith	MA in Social Sector Planning (Candidate); BA in Social Sciences (Sociology and Gender Studies)	Sociologist
Opesen Chris Columbus	PhD (Candidate) Social Anthropology; MSc in Development Management; BA in Social Sciences	Sociologist
Glorius Kasande	MA in Rural Development; BA in Social Sciences (Sociology and Gender Studies)	Gender issues specialist
Dr Mark Divall	Bachelor of Medicine and Bachelor of Surgery; postgraduate diplomas in Anaesthesia, Occupational Medicine and Health, Tropical Medicine and Health, Health Impact Assessment	Health lead
Izak Olivier	Bachelor of Medicine and Bachelor of Surgery; Advanced University Diploma in Occupational Health	Health expert
Dr Alex Mukasa	MSc in Livestock Development Planning and Management, Veterinary Medicine	Livestock specialist
Ian Wickett	HNC Civil Engineering	Traffic lead
Gerry Wait	MA Anthropology and Archaeology; DPhil European Prehistory, Registered Consultant (Heritage) for UNESCO	Intangible cultural heritage lead

Table 1.4-1 Registered and Key Contributing Members of the Environmental and Social Impact Assessment Team

Contributing Specialists		
Name	**Qualification**	**Role**
Sarah Musalizi	MSc Palaeontology for Lacustrine; Postgraduate Diploma in Museum and Heritage Studies; BA Tourism and Geography	Lead archaeologist

1.5 Environmental Impact Statement Structure

The EIS comprises 11 sections and 12 appendices (A–M), as outlined in Table 1.5-1.

Table 1.5-1 Environmental Impact Statement Structure

Section	Description of Section
Executive Summary	Summary of the key findings of the ESIA
Table of Contents	Table of contents
Glossary	Definition of terms, acronyms and abbreviations used

Section 1
Introduction
	Introduction to the ESIA report, including:
	• project purpose
	• project overview
	• EIS overview
	  o purpose
	  o team and list of authors and contributors to the ESIA
	• ESIA structure

Section 2 Project Background and Description	Description of: • project components and associated facilities including functions, locations and layouts • pre-construction, construction, commissioning, operation and decommissioning activities
Section 3 Alternatives	Review of the alternatives considered during the design of the project
Section 4 Legislative, Policy and Administrative Framework	Overview of the project applicable legal, policy and administrative frameworks
Section 5 ESIA Process and Methodology	Description of the ESIA process and methodology for identifying and assessing and determining the significance of potential impacts
Section 6 Environmental and Social Baseline Conditions	Description of the baseline conditions in the project area of influence (AOI), including existing (pre-project) trends in the condition of VECs. This section will be based on the data collected during the scoping and the ESIA stages.

Table 1.5-1 Environmental Impact Statement Structure

Section	Description of Section
Section 7 Stakeholder Engagement	Description of the stakeholder engagement process
Section 8 Potential Impact Identification and Evaluation – Normal Construction and Operations	Identification and assessment of predicted potential impacts during normal construction, commissioning, operation and decommissioning activities
Section 9 Potential Impact Identification and Evaluation – Abnormal Operations and Unplanned Events	Identification and assessment of predicted potential impacts that may occur in the event of abnormal operation or unplanned events (e.g., fire or breakage of the pipeline)
Section 10 Environmental and Social Management Plan	A consolidation description of the management plans developed to prevent or reduce potential impacts, and proposed monitoring
Section 11 Summary and Recommendations	Summary of the key ESIA findings and recommendations of the ESIA
Section 12 References	A list of the published and unpublished reports and other sources of data consulted
Appendices	
Appendix A Baseline Reports	Compilation of the baseline field survey reports
Appendix B Company Certificate of Registration	A company registration certificate registered in Uganda
Appendix C Stakeholder Engagement	• List of the projects' stakeholders identified during the ESIA process • Summary of stakeholder concerns • Records of stakeholder engagement
Appendix D Magnitude and Sensitivity Ranking Tables	Tables defining the VEC-specific criteria for assigning magnitude and sensitivity rankings
Appendix E Impact Assessment Tables	Registers of all expected impacts and mitigation measures • E1: Aspects and Activities Register • E2: Generic Impacts Register • E3: Location-specific Impacts Register • E4: Commitments Register • E5: Content Tables of Management Plans
Appendix F Project Environmental Standards	Project environmental standards proposed for air, water, noise and soil

Table 1.5-1 Environmental Impact Statement Structure

Section	Description of Section
Appendix G Impacts Assessments	Modelling and data analysis carried out in support of the impact assessments: • Erosion Risk Assessment • Acoustic Impact Assessment • Greenhouse Gas Emissions Calculations
Appendix H Cumulative Impact Assessment Supporting Information	• Sources of Cumulative Impact • Location of Screened-in Developments • Cumulative Impacts Matrix • Screened-out Sources of Cumulative Impacts
Appendix I Oil Spill Modelling	An assessment of the environmental risk posed by an oil spill and modelling of oil spill dispersion
Appendix J Environmental and Social Management Plan and Monitoring Parameters	Environmental and social management plan and monitoring parameters for the construction and operational phases of the project
Appendix K Resettlement Policy Strategy	A strategy for the land acquisition and resettlement process
Appendix L Concordance Table	Table showing how NEMA comments made on the scoping report have been addressed in the ESIA
Appendix M Acknowledgements	Acknowledgements of contributions made to producing the ESIA
Appendix N Project Chemicals	Chemicals to be used during the project