EAST AFRICAN
CRUDE OIL
PIPELINE



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SCOPING REPORT

Submitted to:
National Environment Management Authority

By
Total East Africa Midstream BV
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RSK Eco & Partner Consult

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EXECUTIVE SUMMARY

Purpose of this Scoping Report

This Scoping Report has been prepared to define the ESIA terms of reference (TOR) to be applied in assessing the potential project interactions of the Tilenga feeder pipeline and the East African Crude Oil Pipeline (EACOP) project (collectively “the projects”) with valued environmental and social components (VECs).

This Scoping Report and ESIA TOR have been prepared pursuant to the Ugandan National Environment Act Cap 153, the Environmental Impact Assessment Regulations,1998, Guidelines for Environmental Impact Assessment in Uganda, 1997, the Environmental Impact Assessment Guidelines for the Energy Sector, 2004, and the Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda, 2014, and international standards and guidelines.

Project Overview

Several crude oil discoveries have been made in the Lake Albert area. The Tilenga feeder pipeline will deliver crude oil from the Tilenga Project central processing facility (CPF) to the Delivery Point at Kabaale. The EACOP project will be constructed to export the crude oil from the Kabaale Delivery Point to international markets, net of supply commitments to the Kabaale refinery in Uganda.

The EACOP project comprises a buried pipeline through Uganda and Tanzania, aboveground facilities (AGIs) and a marine storage terminal (MST) at Chongoleani, Tanga district on the eastern coast of Tanzania. The pipeline will be thermally insulated to maintain oil temperature during transport. AGIs will comprise six pumping stations and three pressure reduction stations to provide the appropriate pressure for crude oil flow. Oil will be stored at the MST until exported via the offshore load-out facility to oil tankers.

Figure ES1 shows an overview of the Tilenga feeder pipeline and EACOP projects, together with the upstream developments and Kingfisher feeder pipeline.

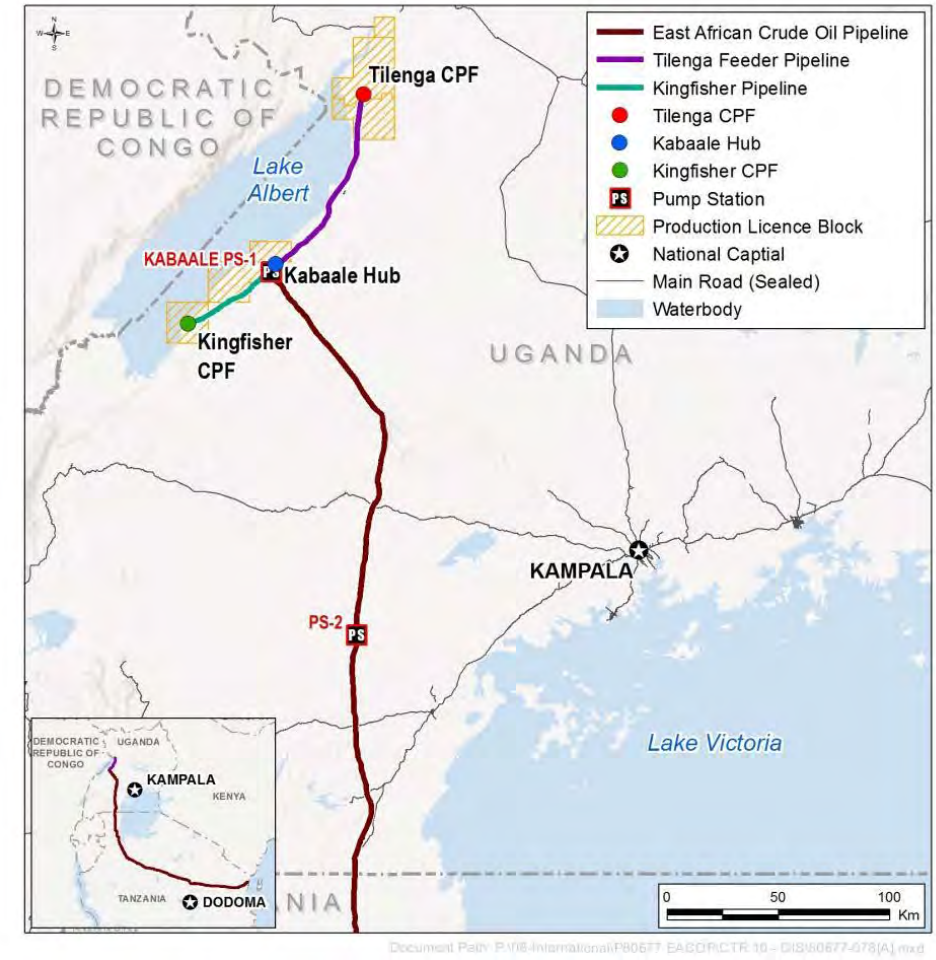

Figure ES1 Tilenga Feeder Pipeline and EACOP Projects

Stakeholder Engagement

Stakeholder engagement has been conducted from the early stages of the scoping study. Stakeholders consulted during scoping included communities, central and local government, and nongovernmental organisations and civil society organisations. The majority of the stakeholder concerns regarding the projects were about matters such as compensation for loss of land, land ownership, influx and associated impacts on health, infrastructure and services, and potential benefits of the project to the local economy. Other frequently raised concerns were potential impacts on biodiversity and Lake Albert fisheries, community water availability, air quality and climate change. Stakeholders also demonstrated an interest in the grievance and feedback mechanisms.

Scoping Study Findings

Data collected during the scoping studies and field surveys provided a preliminary understanding of the existing environmental and socio-economic conditions in the projects' potential areas of influence (AOI), and enabled initial identification of the potentially significant project impacts, as discussed below.

Biodiversity

The projects' route corridor was selected to avoid the most significant areas of biodiversity, so the majority of the 391 km of the combined projects' route corridor is within an area of lower biodiversity significance, where habitats are degraded and levels of anthropogenic influence (cultivation, grazing and charcoal production) are high.

Due to routing constraints, however, the Tilenga feeder pipeline route corridor is within the gazetted area of the Bugungu Wildlife Reserve. Sections of the Tilenga feeder pipeline and EACOP project are also within, or adjacent to, several forest reserves. Such reserves can be designated for harvesting timber, replanting or biodiversity conservation. The route corridor for the EACOP project crosses the Wambabya and Taala Forest Reserves. Several areas of natural habitat also occur outside of the protected areas.

The pipeline routes are known, or likely to, support a number of species of conservation concern, some of which could trigger a classification as critical habitat under International Finance Corporation Performance Standard 6. Pipeline corridors cross several fauna migration routes. A review of secondary data sources has identified active chimpanzee populations in the Tilenga feeder pipeline AOI.

The scoping study concluded that potentially significant residual impacts on biodiversity VECs could occur mainly during the project construction phase associated with wildlife and habitat disturbance.

Physical Environment

The Tilenga feeder pipeline starts in predominantly flat to gently rolling terrain, turning steeper as it crosses faulted rift terrain towards the Kabaale Hub. From there, the EACOP project would traverse gently undulating grass and farmland, hills with open plateaus and bare rocky outcrops, open grassland, wetlands and, near the border with Tanzania, a drier, more sparsely vegetated, relatively flat landscape. The pipeline routes cross several permanent and ephemeral watercourses and wetlands belonging to the Lake Albert, the Victoria Nile basin and the Lake Victoria basins. Local communities use surface water and groundwater for domestic and agricultural purposes. Soils encountered are of low to medium productivity, supporting grazing, commercial plantations and subsistence farming.

The scoping study identified potentially significant residual impacts that could occur mainly as a result of project construction activities, which may lead to temporary impacts on water availability, increased levels of noise, dust and visual intrusion in areas adjacent to construction sites. Accidental leaks and spills during construction and operation could lead to water and soil contamination.

Socio-economic and Health

The Tilenga feeder pipeline and EACOP project will traverse near, and through, a range of towns, villages and communities. In rural areas, the majority of the population concentrates along national and secondary roads with villages often having a central trading place in which main business and social activities take place. The main livelihoods in the AOI are based on agriculture, pastoralism, sedentary livestock farming, fishing, small businesses and tourism.

Potentially beneficial and significant impacts on socio-economics and health identified during scoping that will be assessed during the ESIA are anticipated to occur mainly during the

construction phase linked to: local employment and business opportunities; influx of workforce and associated pressures on infrastructure and services, community safety, security and welfare. During the operational phase of the project, longer-term beneficial economic impacts are likely on a regional and country level.

Archaeology and Cultural Heritage

To date, no archaeological and cultural heritage assets have been identified within the projects' AOI. However, known archaeological and cultural heritage assets outside the AOI suggest that features from colonial and Iron Age periods, palaeontological fossiliferous beds and stone tools could be encountered within the AOI. Chance finds and excavations during pipeline construction could expand cultural heritage knowledge, although there is a risk of disturbance or accidental damage to archaeology and cultural heritage.

ESIA Terms of Reference

Based on the scoping exercise, the ESIA ToR have been developed to guide:

- stakeholder engagement to be implemented during the ESIA
- the scope of work for collection of baseline data on each project VEC. Data collection will include desk-based studies and field surveys to establish an understanding of the VECs to allow for impact assessment.
- the iterative process of developing mitigation measures to minimise impacts
- the method for assessing project, cumulative and transboundary impacts.

ESIA Team

This report has been prepared for the National Environment Management Authority on behalf of the project by an experienced team, comprising the Pipeline Project Team, the engineering consultancy Gulf Interstate Engineering, and the independent environmental and social consultancies RSK Environment Limited and Eco & Partner Consult.

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GLOSSARY AND ACRONYMS

Symbols and units	
°C	degrees Celsius
dB	decibel
dB(A)	decibel adjusted
ha	hectare
Kbpd	thousand barrels per day
km	kilometre
km^2	square kilometres
kV	kilovolt
m	metre
m^2	square metres
m^3	cubic metres
mm	millimetre
MW	megawatt
A	
AGI	aboveground installation
AOI	area of influence
B	
B	beneficial (residual impacts)
BOD	biochemical or biological oxygen demand
BOD5	five-day biochemical oxygen demand
C	
CA	corrosion allowance
CA-1	Contract Area 1
CIA	cumulative impact assessment
CLO	community liaison officer
CO	carbon monoxide
COD	chemical oxygen demand
CPF	central processing facility
CR	critically endangered [IUCN category]
CSCO	Civil Society for Oil
CUL	CNOOC Uganda Limited

D	
DMU	discrete management unit
DWRM	Directorate of Water Resources Management
E	
E	endangered [IUCN category]
EAC	East African Community
EACOP	East Africa Crude Oil Pipeline
EARS	East African Rift System
EHT	electric heat tracing
ESIA	environmental and social impact assessment
F	
FAO	Food and Agriculture Organization [of the United Nations]
FEED	front-end engineering design
G	
GDP	gross domestic product
GHG	greenhouse gas
GIE	Gulf Interstate Engineering
GIS	geographical information system
H	
H_2S	hydrogen sulphide
HIA	health impact assessment
HIV and AIDS	human immunodeficiency virus and acquired immunodeficiency syndrome
I	
IBA	important bird area
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
K	
KBA	key biodiversity areas
KFDA	Kingfisher development area
KP	kilometre point
L	
LA-2	Licence Area 2
LARF	land acquisition and resettlement framework
LIDAR	light detection and ranging
LLHT	longline heat tracing
LOF	load-out facility

M	
masl	metres above sea level
MCPY	main camp and pipe yards
MEMD	Ministry of Energy and Minerals Development
MGLSD	Ministry of Gender, Labour and Social Development
MLHUD	Ministry of Lands, Housing and Urban Development
MoFA	Ministry of Foreign Affairs
MST	marine storage terminal
MTWA	Ministry of Tourism, Wildlife and Antiquities
MWE	Ministry of Water and Environment
N	
NEMA	National Environment Management Authority
NFA	National Forest Authority
NGO	nongovernmental organisation
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NS	not significant (residual impacts)
P	
PAC	project-affected communities
PAH	polycyclic aromatic hydrocarbons
PAU	Petroleum Authority of Uganda
PM	particulate matter
PP	pour point
PPT	Pipeline Project Team
PS	potentially significant (residual impacts), or pumping station when with number, e.g., PS1
PUF	polyurethane foam
R	
RAP	resettlement action plan
RBCA	risk-based corrective action
RBS	Rapid Botanical Survey
S	
SEP	stakeholder engagement plan
SO_2	sulphur dioxide

T	
TEPU	Total E&P Uganda
ToR	terms of reference
TPH	total petroleum hydrocarbons
TUOP	Tullow Uganda Operations Pty Ltd
U	
UETCL	Uganda Electricity Transmission Company Limited
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNOC	Uganda National Oil Company
UNRA	Uganda National Roads Authority
UWA	Uganda Wildlife Authority
V	
VEC	valued environmental [and social] components
VOC	volatile organic compound
VU	vulnerable [IUCN category]
W	
WAT	wax appearance temperature
WCS	Wildlife Conservation Society
WHO	World Health Organization
WMP	waste management plan

1 INTRODUCTION

1.1 Purpose

The purpose of this Scoping Report is to determine the terms of reference to be applied in assessing the likely project interactions of the Tilenga feeder pipeline and the East African Crude Oil Pipeline (EACOP) (collectively "the projects") with valued environmental and social components (social, human health and the environment).

This Scoping Report, which includes the associated environmental and social impact assessment (ESIA) terms of reference (ToR), for the Tilenga feeder pipeline and EACOP project have been prepared pursuant to:

- the National Environment Act Cap 153
- the Environmental Impact Assessment Regulations,1998
- Guidelines for Environmental Impact Assessment in Uganda, 1997
- the Environmental Impact Assessment Guidelines for the Energy Sector, 2004 (Section 4.7)
- the Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda, 2014[1]
- international standards and guidelines.

The EACOP System means the Petroleum export pipeline system intended to run from the inlet flange at Kabaale Pumping Station (PS-01), in Hoima District, Uganda, to an export flange at the marine storage terminal (MST) at Chongoleani, Tanga District, in Tanzania together with the onshore and offshore facilities, including storage, jetty, load out facilities (LOF), heating and pumping installations, telecommunication system, and all facilities and infrastructure ancillary thereto.

The EACOP System is defined in the Inter Governmental Agreement signed by Government of Uganda and Government of Tanzania on 26 May 2017.

The Feeder Lines System means the Petroleum transport pipeline system intended to run from the Tilenga and Kingfisher central processing facility (CPF) outlet flanges into the Delivery Point located at Kabaale in Hoima District. It includes two (2) pipelines to deliver crude oil from the Tilenga CPF, (Tilenga Feeder), via 24" line pipes and the Kingfisher CPF (Kingfisher Feeder) via 10" line pipe to the Kabaale PS-01. The Feeder Lines System is governed under the Uganda Upstream law and regulations as well as the production sharing agreement (PSA).

An experienced ESIA team with extensive pipeline engineering, environmental and social impact assessment knowledge set up a team with local partners experienced in ESIA development in the Ugandan oil and gas sector to prepare this Scoping Report. The team comprises ESIA management from the partners discussed in

[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.

Section 1.3, the engineering consultancy, Gulf Interstate Engineering (GIE), and independent environmental and social consultancies, RSK Environment Limited and Eco & Partner Consult Partnership. Section 8.9 lists the key environmental and socio-economic expert members of the ESIA team.

1.2 Developer's Contact Details

Table 1.2-1 provides the contact details of the project developer.

Table 1.2-1 Developer's Contact Details

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

1.3 Project Overview

Total E&P Uganda B.V. (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 cover the following: 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; and the Tilenga (Buliisa and Nwoya) contract area (CA-1 and northern portion of LA-2). The UPSTREAM PARTNERS and the Government of Uganda wish to develop and construct pipelines to export the crude oil produced from said discoveries to international markets, net of supply commitments to the Kabaale refinery in Uganda.

The various crude oils produced from those areas (CA-1, LA-2 and KFDA) will be treated and stabilised at their respective central processing facilities (CPFs), transported via feeder pipelines to the Delivery Point. The Delivery Point, EACOP first Pumping Station (PS-1) and the Refinery will be located in the future Kabaale Oil and Gas Industrial Park, in Hoima District.

The EACOP project includes all activities related to development, design, construction, installation, commissioning, financing, and operation of the EACOP System. The EACOP System is designed to export Uganda, Lake Albert crude oil discoveries, net of supply to a refinery, through a buried pipeline to the MST at Chongoleani, Tanga District on the eastern coast of Tanzania.

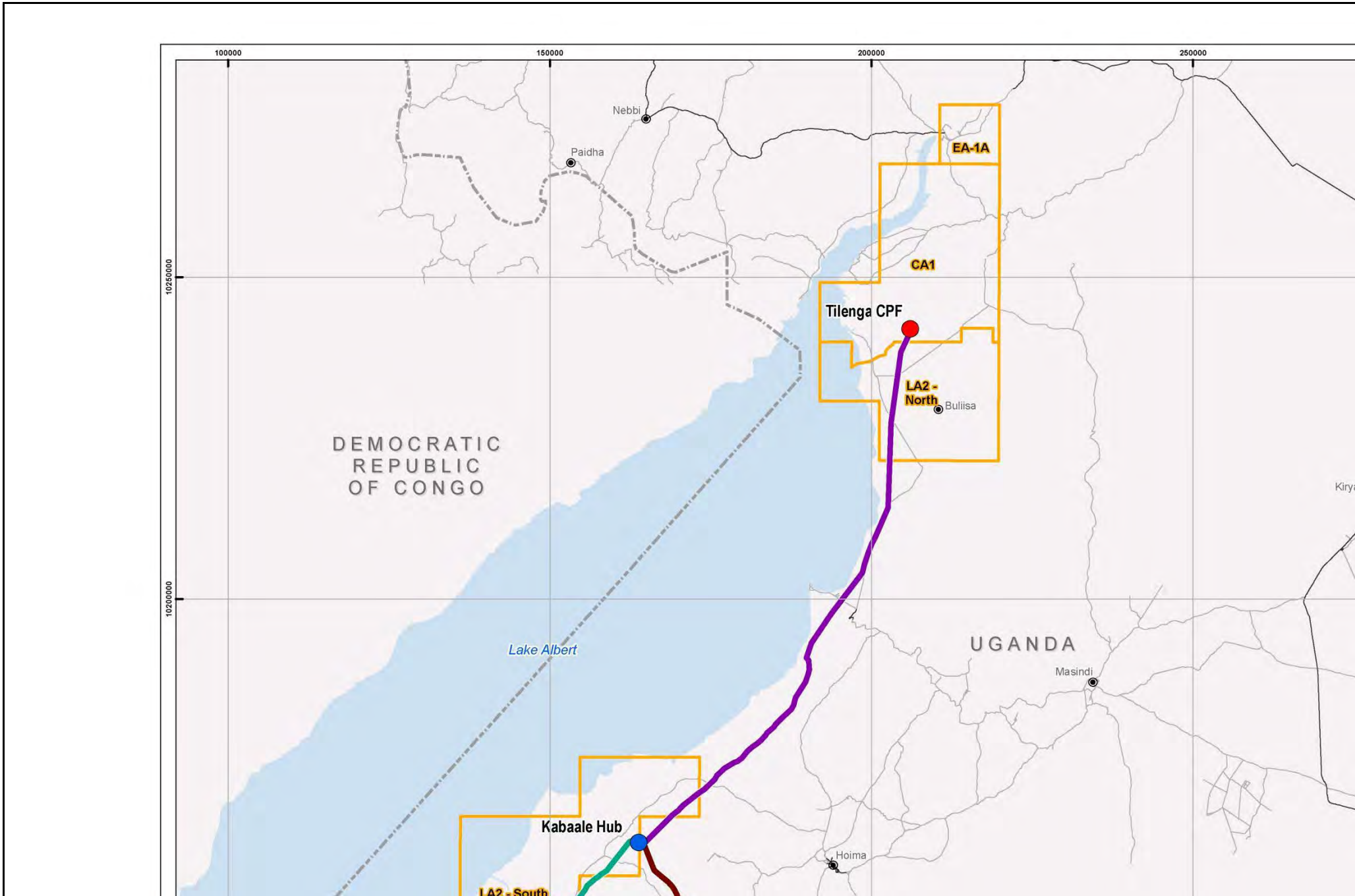
Along the pipeline route from Kabaale to Tanga, six pumping stations are required to provide the proper pressure for crude oil flow at the plateau production rate of 216 kbopd. As the pipeline descends to the Tanga MST area, three pressure reduction stations will be operated to ensure the maximum allowable operating pressure is not exceeded upon arrival at the crude oil storage tanks.

The crude oil will enter the MST storage tanks to maintain an adequate quantity for exportation from the MST via the offshore LOF to oil tankers.

See Figure 1.3-1 for a schematic of Tilenga and Kingfisher upstream CPFs, their respective feeder lines, the refinery and the EACOP System with the AGIs and the MST.

This Tilenga feeder pipeline and EACOP project Scoping Report was prepared by consultants on behalf of the developer for National Environment Management Authority (NEMA) approval.

It is anticipated that the KFDA will produce crude oil for transport to the Delivery Point at Kabaale Hub through the Kingfisher feeder pipeline. The KFDA including the feeder pipeline was the subject of a Scoping Report which was submitted to NEMA.


100000
150000
200000
250000
10250000
10200000
Nebbi
Paidha
EA-1A
CA1
Tilenga CPF
LA2 - North
Buliisa
DEMOCRATIC REPUBLIC OF CONGO
Lake Albert
UGANDA
Masindi
Kabaale Hub
Hoima
LA2 - South

1.4 Scoping Study Objectives and Methods

1.4.1 Objectives

The objectives of the scoping study are to:

- identify the legislative, policy and administrative framework applicable to the project
- document stakeholder engagement undertaken during the scoping phase and outline concerns expressed about the project for use in the ESIA planning
- identify, select and describe briefly the valued environmental and social components (VECs[2]; see Section 1.4.2.2), that could be affected by the project
- determine the projects' potential area of influence (AOI)
- identify alternatives to the projects
- identify potentially significant impacts that could result from interaction between the projects' activities and the VECs, which include socio-economic components, that require evaluation in the ESIA
- describe the methodology that will be used to assess the potentially significant interactions when the ESIA is undertaken
- establish the ESIA ToR which includes, amongst other requirements:
  - results of scoping findings
  - a scope of work that describes the baseline assessments that will be undertaken to gain a better understanding of the environmental and social context of the AOIs and the assessments that will be undertaken.

1.4.2 Methodology

1.4.2.1 Tasks Undertaken During the Scoping Phase

The tasks undertaken during the scoping phase are described below:

- project definition:
  - exchanging information and undertaking workshops with the engineering team to assist in refining the route corridor, develop the project description and develop preliminary mitigation measures
  - assessing, by field visits with the engineering team, segments of the route and potential temporary and permanent project sites with high potential for interaction with VECs
  - reviewing project elements and activities that may interact with VECs
  - identifying third-party projects and associated facilities that could give rise to cumulative impacts.
- legislation, standards and guidelines review:
  - identifying and reviewing relevant national legislation, standards, sector guidelines, permit requirements, international conventions and agreements, and international guidelines and standards

[2] A VEC is considered the same as a sensitive receptor and is used for both project and cumulative impacts.

- stakeholder consultation:
  - informing lead agencies, national and local government entities, nongovernmental organisations and potentially affected people about the project and the stakeholder engagement process
  - listening to and recording the views of stakeholders about the proposed project, and subsequently considering these views and concerns when scoping the ESIA
  - presenting the preliminary list of VECs and identifying potential impacts on VECs associated with interactions with the project
  - identifying third-party projects that could give rise to cumulative impacts
  - developing a mechanism for ongoing communications with stakeholders
  - identifying additional stakeholders
  - obtaining secondary baseline data from key informants
- identification of potentially significant residual impacts, using the definitions in Section 5.5:
  - A multidisciplinary workshop was held during which project activities were reviewed for potential interaction with VECs using a social and environmental impact identification (SENVID) matrix.
  - The matrix was reviewed subsequently by the ESIA team who used their extensive experience of major pipeline projects to determine which of these interactions could cause beneficial impacts, not significant and potentially significant adverse impacts after implementation of standard mitigation measures and for scoping purposes:
    - Beneficial impacts and the potential to enhance beneficial impacts will be assessed in the ESIA.
    - Not significant impacts will not be assessed in the ESIA, but the mitigation measures required to render these impacts not significant will be included in the commitments register and management plans of the ESIA.
    - Potentially significant adverse impacts will be assessed in the ESIA.
- determination of the areas of influence (AOIs) and the collection of information on the existing VECs which the project could interact with:
  - determining the potential AOIs for individual VECs and for the project overall, for both the ESIA and cumulative impact assessment (CIA)
  - desk-based research, including a multidisciplinary review of satellite imagery and light detection and ranging (LIDAR) data
  - information gathering on the upstream projects, the strategic environmental assessment for the Albertine Graben and related documents including available monitoring data. This information is relevant for the Tilenga feeder pipeline and EACOP project.
  - developing a preliminary land-cover map, showing broad land-cover types using remote sensing, LIDAR and other data
  - broadly classifying habitats using the preliminary land-cover map, as either modified or natural as required by International Finance Corporation (IFC) Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (PS6)
  - reviewing detailed desk-based data to identify species and habitats of conservation concern potentially associated with each mapped habitat type for these areas to be prioritised for surveys

  - GIS mapping of key features and potential constraints
  - identifying and selecting VECs that could be affected by the project, see Section 1.4.2.2.
- review and development of impact identification and evaluation methodologies appropriate for a pipeline ESIA in Uganda
- establishing and drafting the ESIA terms of reference.

1.4.2.2 Identification and Selection of VECs

The ESIA will conform to national and IFC Performance Standards (PSs). IFC defines VECs as:

> "environmental and social attributes that are considered to be important in assessing risks; they may be:
>
> - physical features, habitats, wildlife populations (e.g. biodiversity)
> - ecosystem services
> - natural processes (e.g. water and nutrient cycles, microclimate)
> - social conditions (e.g. health, economics), or
> - cultural aspects (e.g. traditional spiritual ceremonies)." (IFC, 2013)

The project team identified a common preliminary list of VECs for the projects (i.e., the same VECs were identified for the Tilenga feeder pipeline and EACOP project), see Appendix A, and discussed this with key stakeholders during the scoping phase stakeholder engagement to validate their use for the Scoping Report and the ESIA. They may be refined during the period between the submission of the Scoping Report and the preparation of the ESIA.

1.5 Report Structure

This scoping report includes sections on:

- Project Description
- Legislative, Policy and Administrative Framework, Permitting Requirements, and International Standards And Guidelines
- Scoping Stakeholder Engagement
- Key Project Impacts and Risk Analysis
- Project Area of Influence and Existing Baseline Conditions
- Impact Identification and Evaluation Methodologies
- ESIA Terms of Reference
- References
- Appendices:
  - Valued Environmental and Social Components
  - Stakeholders and Institutions Consulted, and Contact Information
  - Scoping Level Stakeholder Concerns
  - Record of Stakeholder Engagement
  - Preliminary Project Impact Assessment Table
  - ESIA Project Team and CVs.

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2 PROJECT DESCRIPTION

2.1 Introduction

2.1.1 Project Description Contents

EACOP System overview information is included in Section 1.3.

This section describes the part of the project proposed for Uganda and includes scoping level information on:

- project design
  - project design overview
  - pre-front end engineering and design (FEED)
  - FEED
  - route and site selection
  - typical pipeline section
  - project components
  - associated facilities
- project activities
  - pre-construction
  - construction
  - pre-commissioning and commissioning
  - operations
  - decommissioning
- health, safety, security, social and environment
- waste management
- schedule

2.1.2 Assumptions and Limits

This project description has been prepared based on project pre-FEED studies and ongoing FEED studies. FEED includes developing design and construction methods and requirements such as the number of construction spreads, camps and other facilities. FEED studies are influenced by completed and planned baseline data collection including stakeholder engagement. Therefore, some of the quantitative project description and location information included in this project description is subject to further refinement. A finalised project description based on FEED and completed baseline data collection will be included in ESIA report.

2.2 Project Design

2.2.1 Project Design Overview

The characteristics of the Albertine Graben oil, particularly the pour point (PP) and wax appearance temperature (WAT) require fit-for-purpose pipeline, storage and loading project design.

Table 2.2-1 Project Design Basis

Parameter	Value
Design flow rate	216 thousand barrels per day (Kbpd)
Corrosion allowance (CA)	1.2 millimetres (mm)
Pipeline operating temperature	50°C

Both the Tilenga feeder pipeline and EACOP project will be buried, thermally insulated with polyurethane foam (PUF) and electrically heat traced for the entire length of the pipelines.

The EACOP System consists of a 1446-km-long pipeline with a 24-inch outside diameter and designed to Class #600 and Class #900 rated pressures as defined in ASME guidance. It will be capable of transporting the crude oil plateau rate of 216 kbopd and be operated between 80°C and 50°C.

Figure 2.2-1 provides an overview of the design principles that are described further in Sections 2.2.4 and 2.2.5.

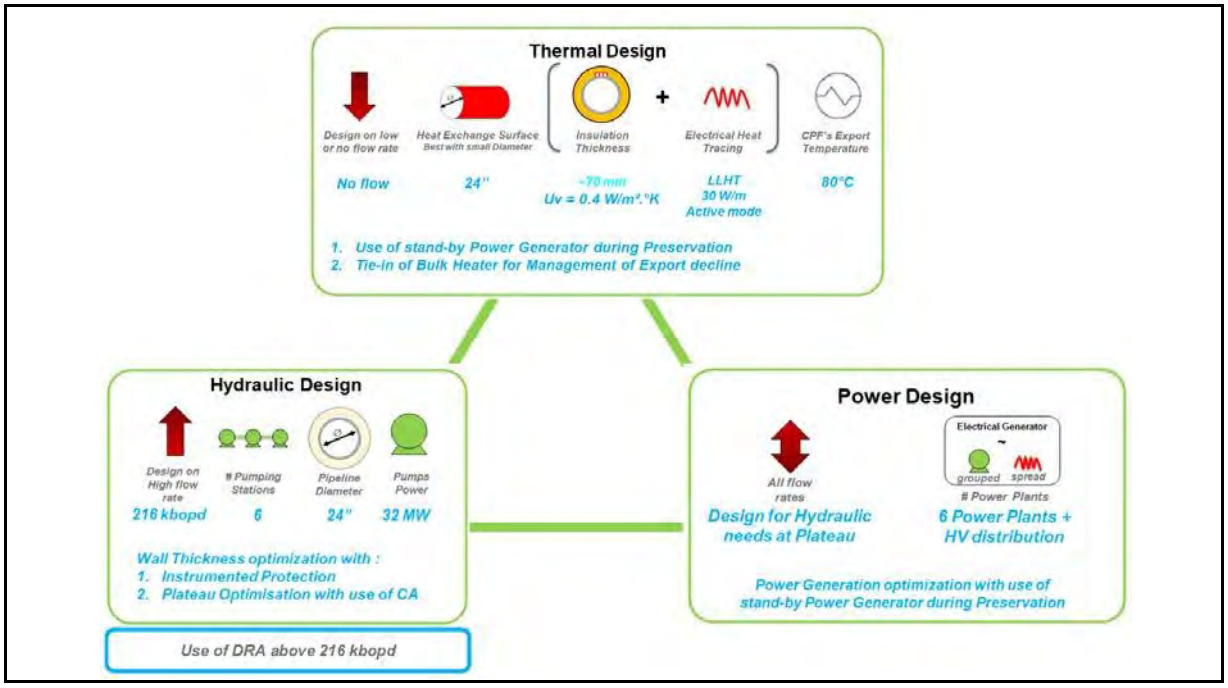


Figure 2.2-1 Design Principle Overview

DRA – drag reducing agent, LLHT – longline heat tracing, HV – high voltage, CA – corrosion allowance, Uv – ultraviolet

2.2.2 Prior FEED and FEED studies

The completed early stage studies (Feasibility, Concept) and pre-FEED study scopes of work consisted of:

- a desktop survey to identify several potential corridors for a pipeline that would terminate at a port on the Indian Ocean where tankers could be loaded

- a high-level evaluation and identification of 11 potential 50-km-wide corridors
- further evaluation resulting in a reduction from 11 to 3 corridors
- selection of the final route and reduction of the 50-km corridor to a 10-km corridor
- identification of a 2-km wide corridor that would be suitable to undertake a light detection and ranging (LIDAR) survey and collection of aerial imagery.

FEED consists of:

- project integration with upstream project facilities
- finalisation of the feeder and main pipeline routes
- finalisation of aboveground installation (AGI) locations and concepts
- layout and sizing for the marine storage terminal (MST) in Tanzania
- civil works
- development of a project logistics philosophy plan.

FEED study was awarded in January 2017 to Gulf Interstate Engineering with a planned completion in August 2017. Until then, additional studies continue that, in part, will also be dependent on the results of the ESIA baseline data collection. As a result, this section of the Scoping Report presents a scoping-level project description and the ESIA report will include a completed FEED-based description.

2.2.3 Route and Sites Identification

2.2.3.1 Route Identification

The Governments and the Upstream Partners undertook the pipeline routing. The routing included technical, environmental and social considerations. The initial technical considerations used to evaluate the constructability of the route were as follows:

- remoteness from infrastructure
- topography
- shallowness of bedrock
- road and watercourse crossings
- flooding and landslide hazards
- seismic activity.

Following on from the constructability review, further routing considerations were:

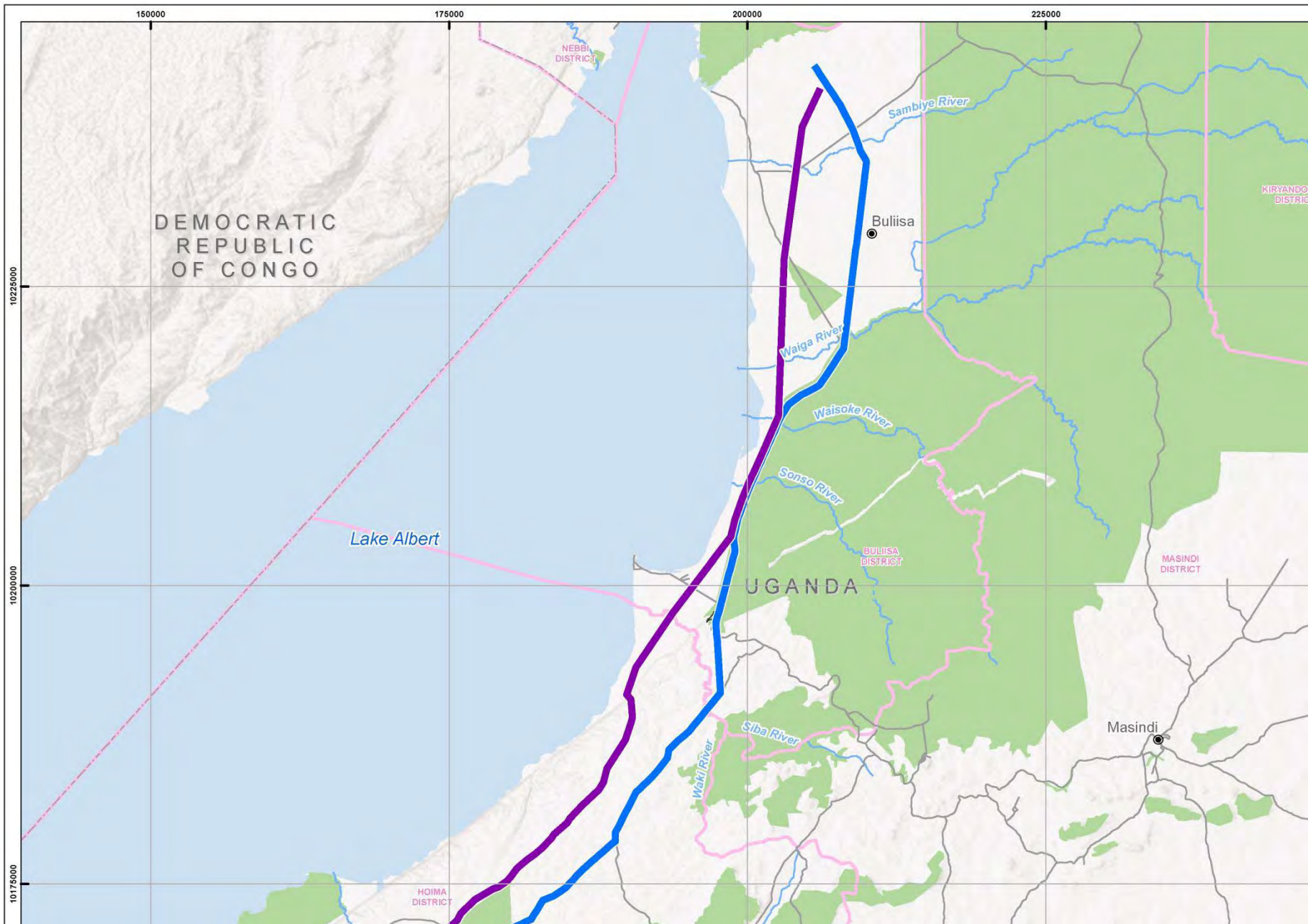
- cultural
- populations
- security
- tourism
- infrastructure
- land use
- geohazards
- hydrography
- relief.

The EACOP project considered alternative routes from the Kabaale area to potential ports on the East African coast. Multiple port locations were identified and potential 50-km-wide pipeline corridors evaluated. Secondary information, including remote sensing, was used to assess the potential corridors from Uganda through Kenya and Tanzania. Using a geographic information system (GIS), 24 quantitative and qualitative considerations were identified and weighted.

Using the GIS and statistical analysis, least risk and cost potential routes were identified: two routes for the feeder pipeline (see Figure 2.2-2) and for the EACOP System, a Kenya north route to Lamu, a Kenya south route to Mombasa and a northern Tanzania route to Tanga (see Figure 2.2-3).

Using higher-resolution satellite imagery, the identified routes were refined by integrating evaluation of social and environmental constraints, geohazards, constructability and constraints associated with terrain, e.g., river crossings and slopes.

Further to consideration of the detailed studies of the three identified routes, the Government of Uganda selected the Uganda–Tanzania route on 23 April 2016; see Figure 2.2-4.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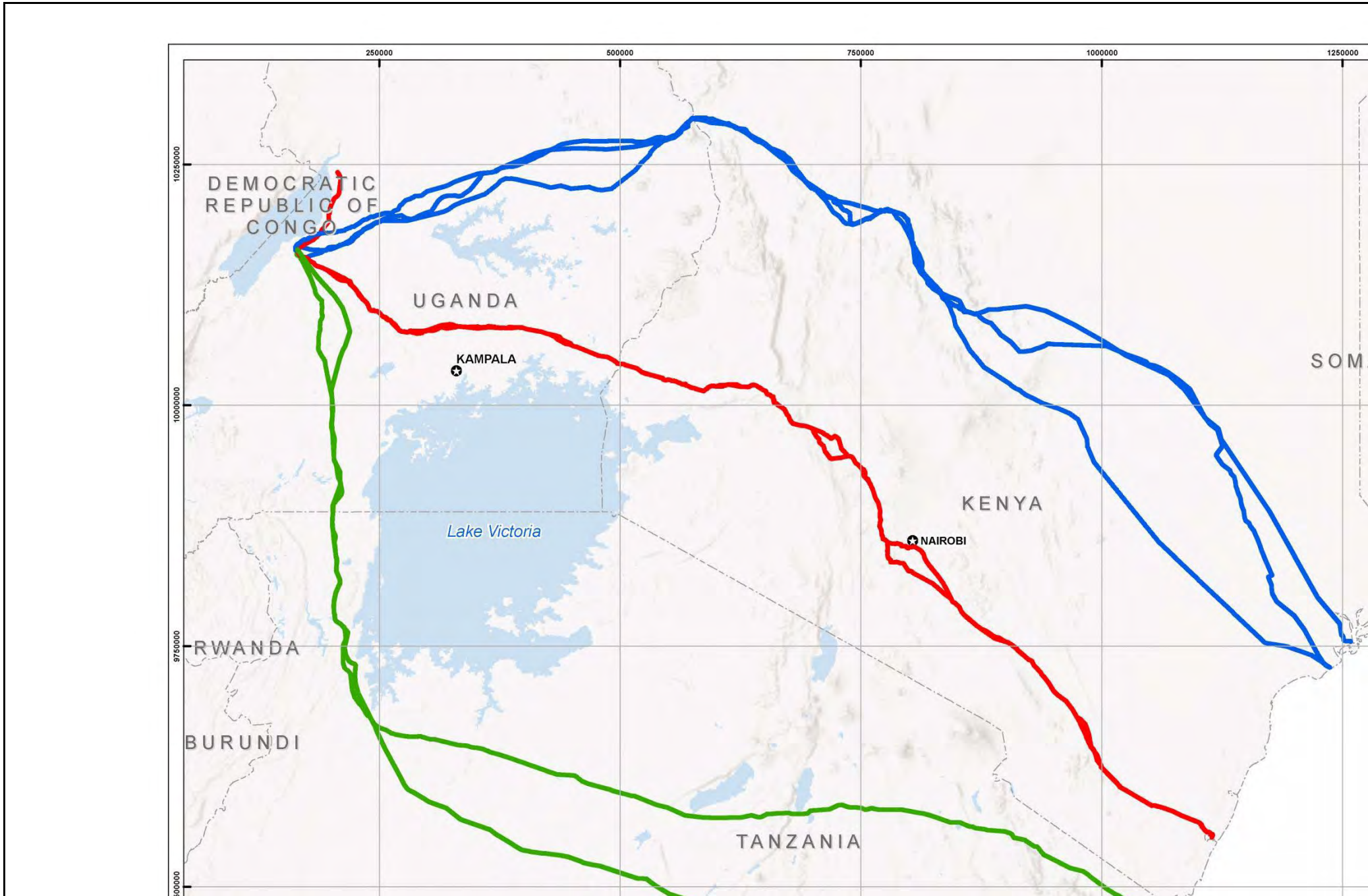
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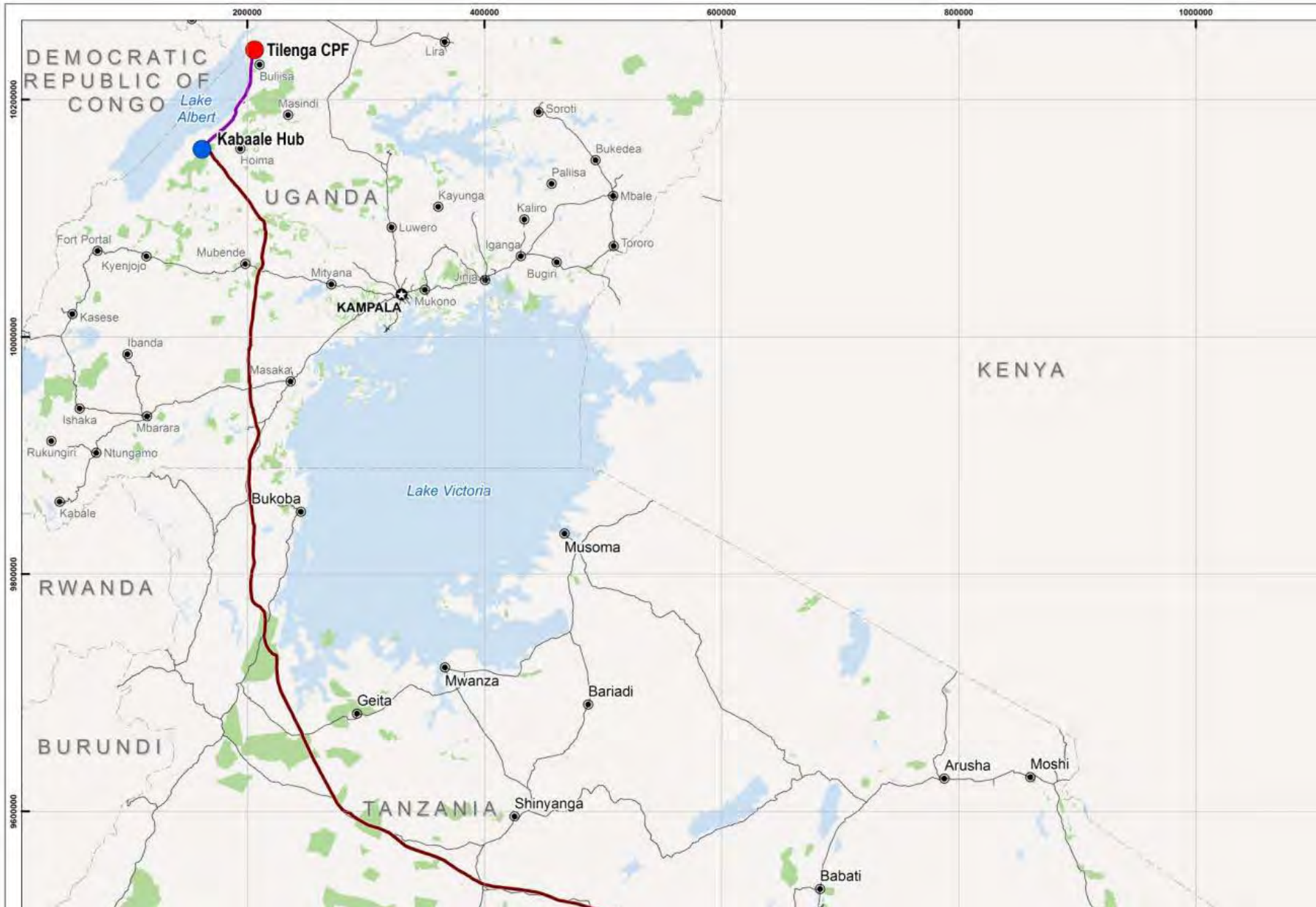
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Lira
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Mbale
UGANDA
Kayunga
Kaliro
Luwero
Iganga
Tororo
Fort Portal
Kyenjojo
Mubende
Mityana
Jinja
Bugiri
KAMPALA
Mukono
Kasese
Ibanda
Masaka
KENYA
Ishaka
Mbarara
Rukungiri
Ntungamo
Lake Victoria
Bukoba
Kabale
Musoma
RWANDA
Mwanza
Bariadi
Geita
BURUNDI
Arusha
Moshi
TANZANIA
Shinyanga
Babati

Further to the Uganda-Tanzania route selection, a screening of environmental and social constraints was performed to refine the route corridor. In addition, the engineering team addressed constructability requirements and established proximity to established roadways to reduce construction impacts and costs. The outcome was the delineation of a 2-km corridor for the route and the identification of residual constraints.

Figure 2.2-5 summarises routing constraints in Uganda identified during the screening phase.

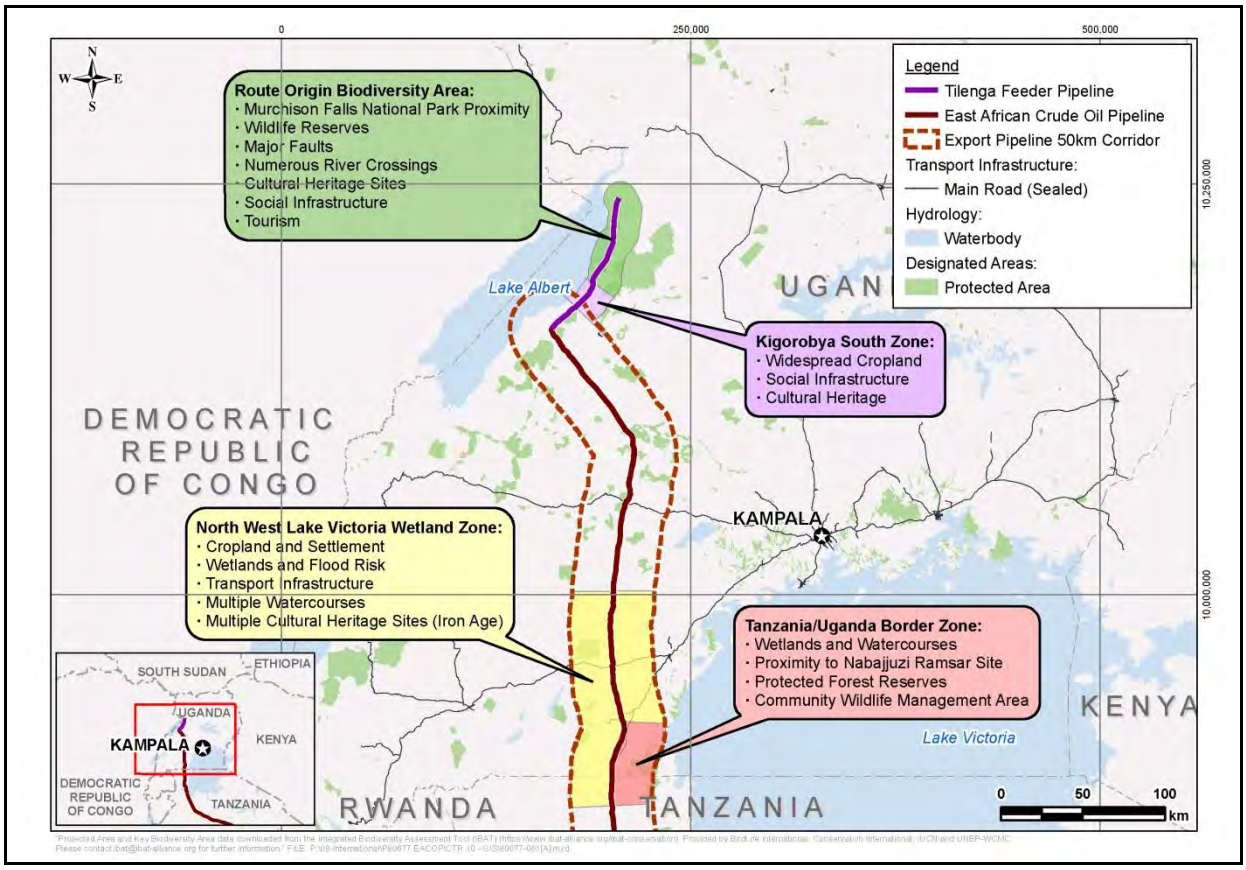


Figure 2.2-5 Pipeline Route Summary Constraint Zones

This phase was followed by a site visit in April 2017 by an engineering and environmental and social team to constraint areas along the 2-km corridor from the Tilenga Project CPF to the MST in Tanga. Routing refinements were identified resulting in further optimisation. In parallel, updated LIDAR and aerial imagery were obtained and, with the results from the site visit, used to define the centreline of a 100-m corridor. The route will be refined to a 30-m wide as an iterative process between the FEED and ESIA studies. The 30-m route will be used as the basis for the impact assessment.

Figure 2.2-6 illustrates the use of LIDAR and imagery to optimise rerouting.

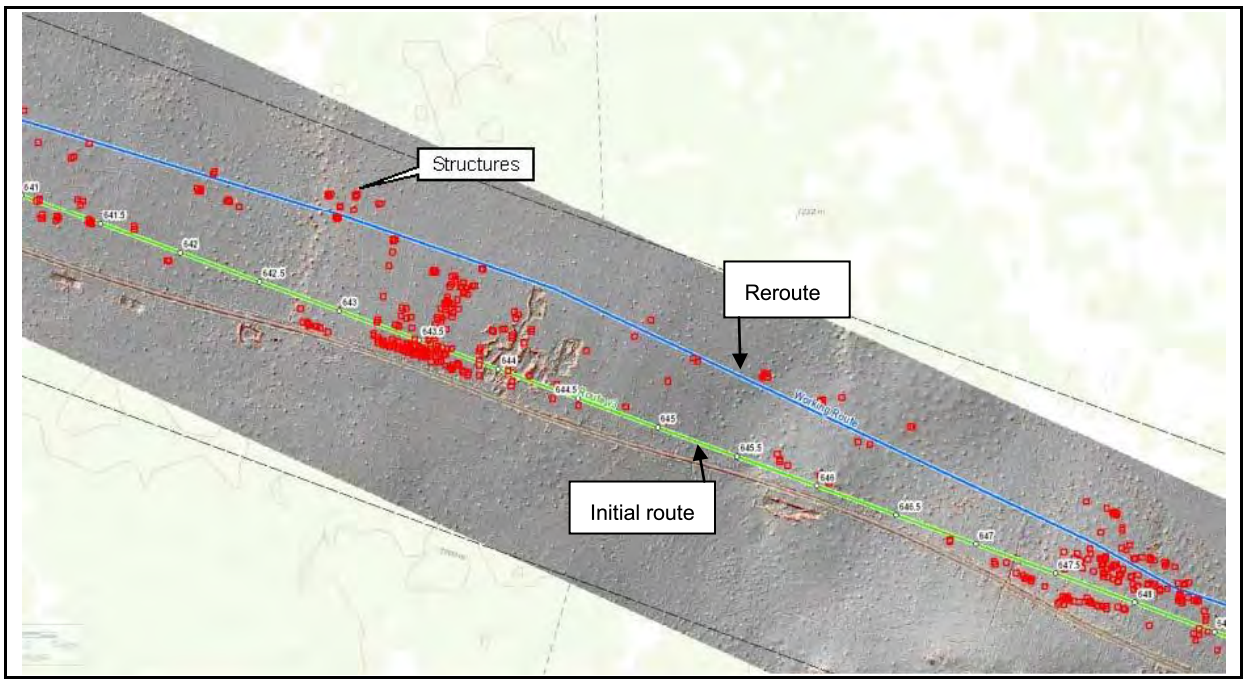
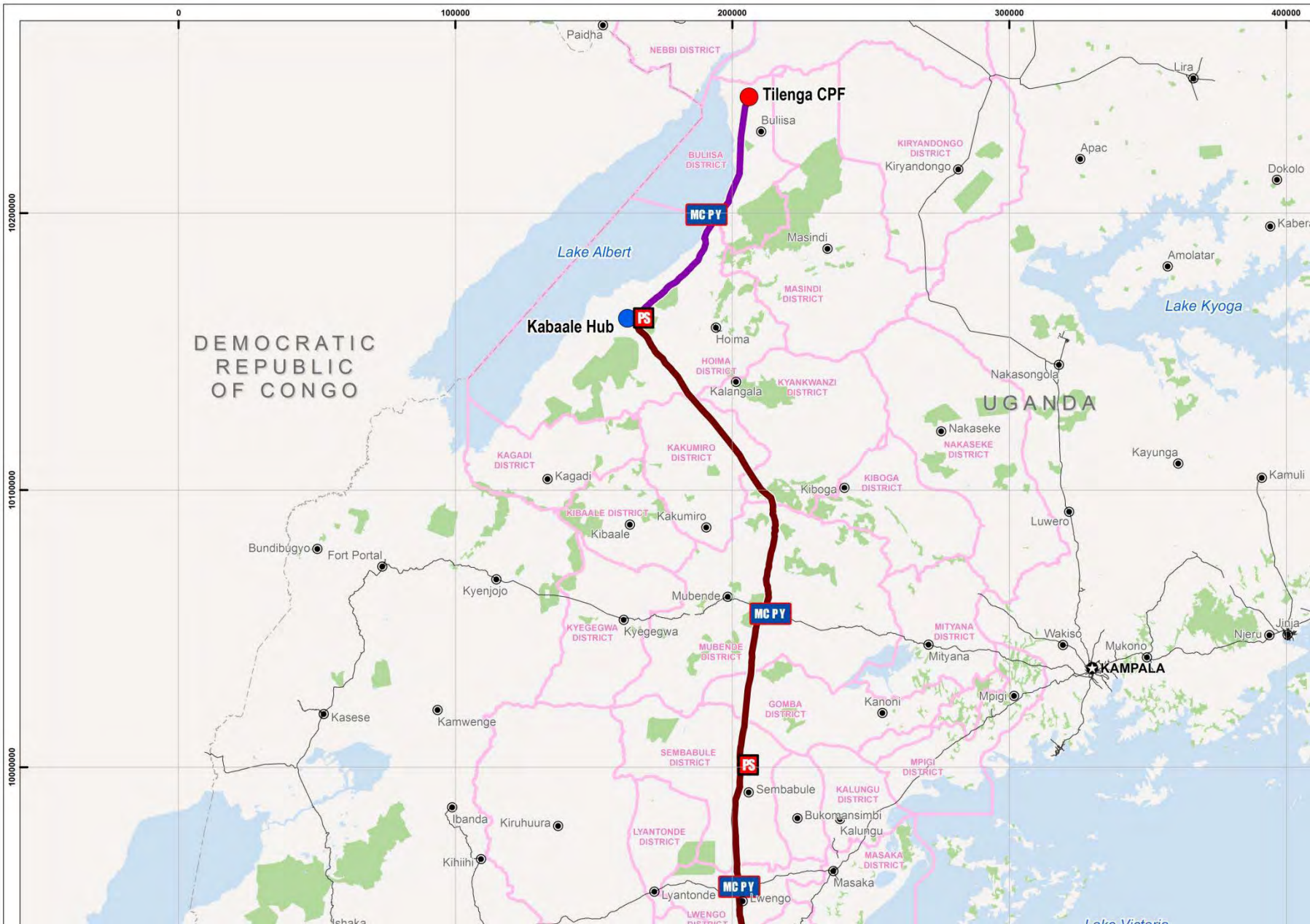


Figure 2.2-6 Route Optimisation Using LIDAR Imagery

The Tilenga feeder pipeline and the Ugandan section of the EACOP project will be about 390-km long. Combined, the projects will cross the western and central regions, and Buliisa, Hoima, Kakumiro, Kyankwanzi, Mubende, Gomba, Sembabule, Lwengo and Rakai Districts (see Figure 2.2-7).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NEBBI DISTRICT
BULIISA DISTRICT
KIRYANDONGO DISTRICT
Kiryandongo
Lira
Apac
Dokolo
Lake Albert
Masindi
MASINDI DISTRICT
Amolatar
Lake Kyoga
Hoima
HOIMA DISTRICT
KYANKWANZI DISTRICT
Kalangala
Nakasongola
DEMOCRATIC REPUBLIC OF CONGO
UGANDA
Nakaseke
NAKASEKE DISTRICT
Kayunga
KAGADI DISTRICT
KAKUMIRO DISTRICT
Kagadi
Kiboga
KIBOGA DISTRICT
Kamuli
KIBAALE DISTRICT
Kakumiro
Kibaale
Luwero
Bundibugyo
Fort Portal
Kyenjojo
Mubende
KYEGEGWA DISTRICT
Kyegegwa
MUBENDE DISTRICT
MITYANA DISTRICT
Wakiso
Njeru
Jinja
Mityana
Mukono
KAMPALA
Mpigi
Kanoni
Kasese
Kamwenge
GOMBA DISTRICT
SEMBABULE DISTRICT
MPIGI DISTRICT
Sembabule
KALUNGU DISTRICT
Ibanda
Kiruhuura
Bukomansimbi
Kalungu
LYANTONDE DISTRICT
Kihiihi
MASAKA DISTRICT
Masaka
Lyantonde
Lwengo
LWENGO DISTRICT
Lake Victoria

2.2.3.2 Sites

Delivery Point at Kabaale Industrial Park EACOP PS-01

The EACOP project PS-01 (see Figure 2.2-7), the first EACOP pumping station, will be located in the Kabaale Hub (located in the government owned Kabaale Industrial Park). The Government of Uganda has acquired 29.57 km² at Kabaale to establish an industrial area that includes a refinery, an international airport, the EACOP crude oil export PS-01, energy-based industries, petrochemical industries, and common facilities and services.

Aboveground Installation (AGI) Locations

The locations of the other EACOP project pumping stations are based on detailed hydraulic analysis of the proposed pipeline, access road locations and the results of various studies, including a site visit by the engineering, and environmental and social teams. Additional imagery and the site visit established accurate locations for both pumping and pressure reduction stations. Pumping station locations are indicated on Figure 2.2-7.

The locations of the heat trace substations and block valve stations will be refined based on the final locations of the pumping stations and ongoing FEED studies.

2.2.3.3 Temporary Facility Locations

Construction camps and associated pipe yards, and the coating facility locations are based on siting criteria that include terrain and minimising distances from the existing road network, land take and associated potential project interactions on environmental and socio-economic features.

Constraints mapping completed for the route identification also informed the initial locations for the temporary facilities. The engineering, and environmental and social teams' site visit and the LIDAR and aerial photography were used to refine the camp locations; Figure 2.2-7 shows the approximate locations. The final locations are dependent on additional FEED studies, and the completion of the project's logistics philosophy plan and will be provided in the ESIA.

2.2.3.4 Access Roads

Two types of access roads will be constructed: temporary access roads that provide access to the temporary facilities, e.g., camps, and potentially access roads to the right-of-way and permanent access roads to the pumping stations and the Kabaale Hub.

For both types of access road, a facility's location dictated the road's route selection. The first step was to use imagery to identify existing roads that could be used, followed by an evaluation of existing structures, livelihood activities and environmental constraints so they could be avoided. Access (temporary and permanent) road maps were developed as a result of this process. The maps provided indicative routes that were visited in during the field review trip for further verification and final route selection.

2.2.3.5 Design and Technology Selection Process

During the ongoing FEED phase, a technology selection process will be undertaken that will address the following core project components:

- power generation systems
- storm management for substance affected runoff
- waste management
- fugitive emission control.

The selection process will evaluate alternative project technologies based on engineering, commercial and environmental criteria. This process, including the criteria and alternatives evaluated, will be described in the ESIA.

2.2.4 Typical Pipeline Section

For the Tilenga feeder pipeline and EACOP project, a typical pipeline section will have fusion-bonded epoxy (FBE) anticorrosion coating applied to protect the pipe over the course of its operational life against external corrosion.

Because of the waxy and viscous fluid properties of the produced crude, the pipeline will operate at a temperature ranging from 80°C to a minimum of 50°C. Temperatures will be maintained at all times by a combination of insulation, electrical trace heating system (EHT) and bulk heaters. The EHT system includes an aluminium race way to house three heat-tracing electric cables; insulating the pipe with a polyurethane foam material about 70-mm thick; and applying a high-density polyethylene (HDPE) extruded covering. The EHT system and bulk heaters will operate for flow conditions lower than the design capacity.

The EHT system will require electrical power from a 22/33-kV high-voltage powerline installed parallel to the pipeline trench. Generators integrated in pumping stations along the route will provide the power. Electrical substations will be installed at 40–60-km intervals along the route to transform power from the high-voltage powerline to the voltage required by the heat tracing system.

A fibre-optic cable will be installed for telecommunication, automation and monitoring purposes.

Figure 2.2-8 shows a cross-section of the pipeline trench with its contents.

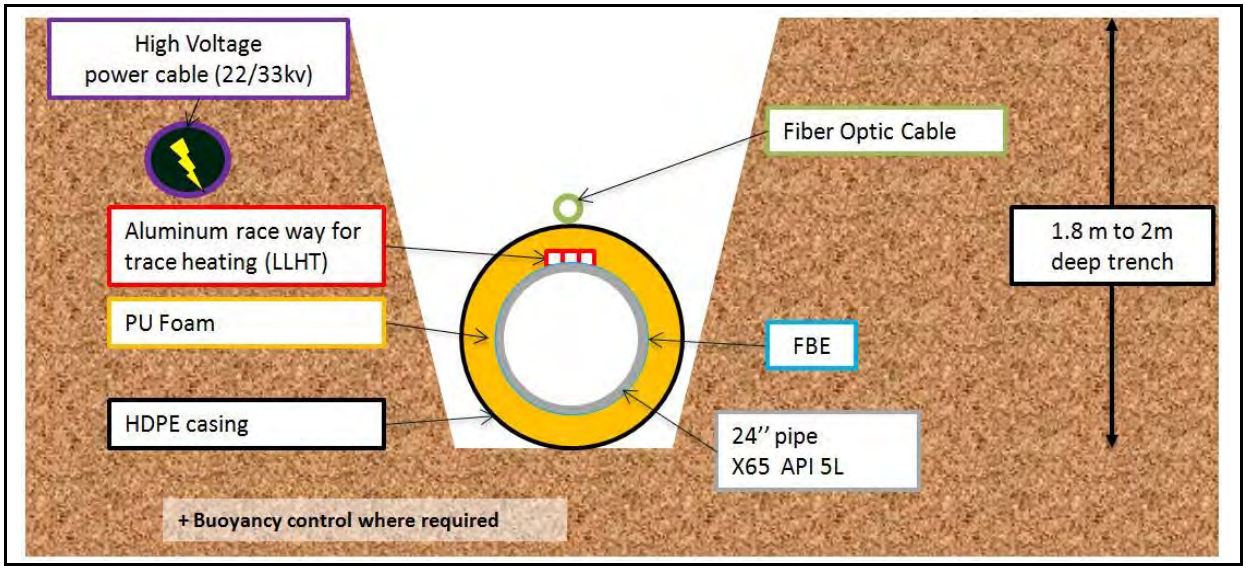

Figure 2.2-8 Pipeline Cross-Section

NOTE: The American Petroleum Institute specification API 5L addresses seamless and welded steel line pipe for pipeline transportation systems in the petroleum and natural gas industries. Grade X65 indicates 65000 PSI minimum yield strength and 77000 PSI minimum ultimate tensile strength
LLHT = longline heat tracing

2.2.5 Tilenga Feeder Pipeline and the EACOP Project

2.2.5.1 Core Components

Table 2.2-2 lists the core components of the Tilenga feeder pipeline and the EACOP System.

Table 2.2-2 Core Components

Uganda	Comments
Tilenga feeder pipeline	
Feeder pipeline from Tilenga outlet flange to Kabaale PS-01, 24-inch-diameter buried and insulated with trace heating system	95 km
Pigging station	Located at Tilenga CPF
One construction camp with pipe yard for the Tilenga feeder pipeline	Camp F1 – KPF 45
EACOP project	
296 km of 24-inch-diameter export pipeline, insulated, trace heated, buried pipeline from Kabaale to Uganda–Tanzania border	KP0–296
Two pumping stations	PS1–KP0 (at Kabaale Hub) PS2–KP186, also contains a bulk heater
Block valve stations	Located in the operational RoW and to be finalised during FEED

Table 2.2-2 Core Components

Uganda	Comments
Electrical substations	Located in the operational RoW and to be finalised during FEED
10.5 km of non-national access roads	5 km of new and 5.5 km of upgraded existing roads
Four main construction camps with pipe yards	Camp 1 – KP40 Camp 2 – KP125 Camp 3 – KP191.5 Camp 4 – KP288.5

2.2.5.2 Aboveground Installations

Because of the length of the pipeline and the requirement to keep the crude moving through the pipeline at a temperature of 50°C, supporting AGIs will be constructed and operated as described in Section 2.3.4.

The AGIs will ensure that:

- flow is maintained (pumping stations)
- the design temperature of the crude oil is maintained (insulation and, as required, bulk heaters)
- pipeline EHT lines can be powered (electrical substations)
- sections of the pipeline can be isolated and maintained (block valve stations).

The sections below describe the AGIs relevant to Uganda and the permanent access roads needed to access the AGIs over the pipeline's lifespan.

Tilenga Project CPF

The CPF will accommodate a 20 × 20 m pigging[3] station dedicated to the feeder pipeline and EACOP control and security rooms.

Kabaale – EACOP PS1

The Tilenga and Kingfisher crude volumes will be gathered at the Kabaale Industrial Park and allocated to the refinery and the EACOP System. The interface between the feeder lines and the EACOP PS1 is the fiscal meter at the outlet of the Kabaale manifold (see Figure 2.2-9). The power supply to operate PS1 is generated at the Tilenga Project CPF.

[3] Pipeline intelligence gauging system (pigs) for integrity testing and maintenance introduced into the line via a pig trap, which includes a launcher and receiver. Without interrupting flow, the pig is then forced through or towed by another device or cable. Pigs sweep the pipeline by scraping the sides of the pipeline and pushing debris ahead of the pig to the pig receiver where the debris and the pig are recovered without interrupting the flow.



Figure 2.2-9 Kabaale Industrial Park Layout[4]

Pumping, Bulk Heating and Power Generation Station

The pipeline route steady-state hydraulic study established the requirement for two pumping stations in Uganda; see Table 2.2-2, Figure 2.2-7 and Section 2.2.3.2. Figure 2.2-10 depicts a typical pumping station layout.

[4] Only the Tilenga feeder pipeline, the East African Crude Oil Pipeline and the Kabaale pumping station are part of the projects

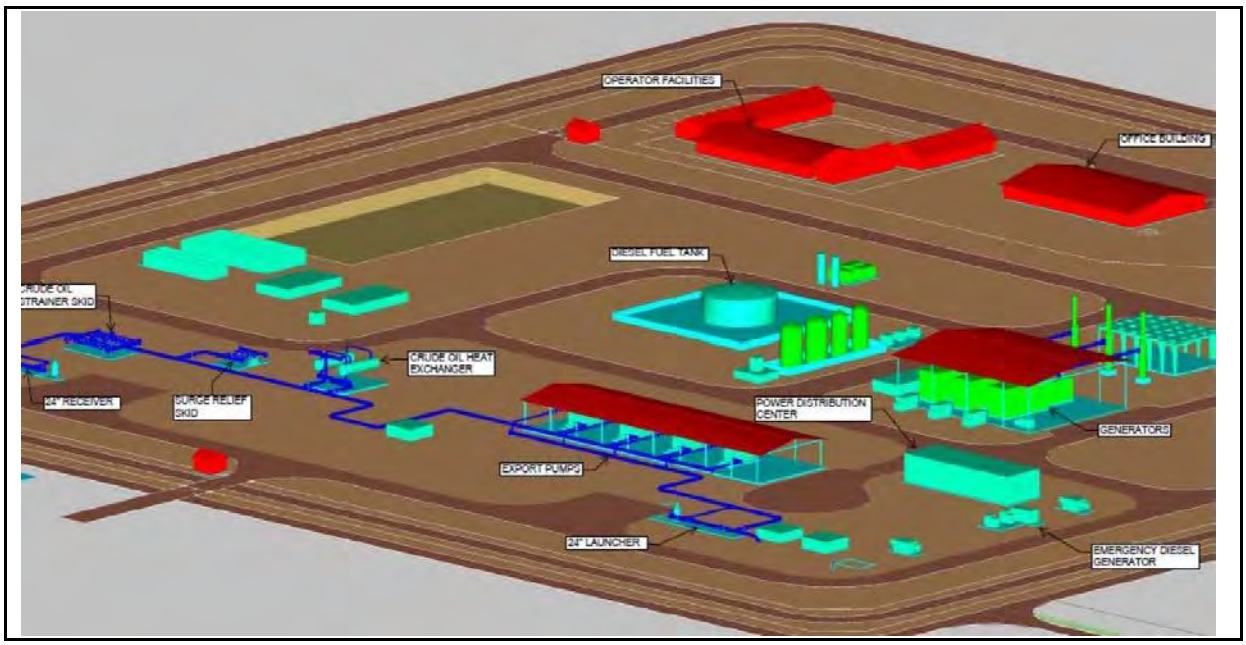

Figure 2.2-10 Typical Pumping Station Layout

The design basis for the pumping stations is as follows:

- The pumping stations will be self-contained and independent of locally supplied electricity, water, and waste or sanitary treatment.
- Each pumping station will have four pumps, based on the 216,000-barrel flow rate.
- The EHT will provide heating during reduced flow rates, shutdowns or when maintenance is required.
- Some pumping stations will include a crude oil bulk heating system to maintain crude oil at operational temperature. The number will be confirmed during the FEED.
- Power generation units will be sized based on the maximum load demand for the pumping station operations and EHT power supply demands.
- Crude oil treatment for the power generation unit will be incorporated into the plot plan design and residual waste will be heated and injected into the pipeline.
- Personnel accommodation will be considered at the pumping station.
- Fire protection pumps and fire-water storage tanks will be sized according to applicable national codes and standards.
- An emergency generator will be included to support the basic non-pumping operations of the pumping station in the event of catastrophic failure of the three primary generator sets.
- Standard foundation design will be refined during detailed design engineering when the geotechnical data are available for each of the sites.
- The approximate size of a pumping station will be 300 × 300 m.
- The pumping stations will be fenced.

Heat Tracing Power Supply and Electrical Substations

The electrical distribution network to support the trace heating system will require both 22- and 33-kilovolt (kV) cabling and several electrical substations to support the EHT operations. Based on the final design requirements, a power supply and distribution analysis will be developed undertaken to establish the power generation requirements at each of the AGIs, sizing for the 22- and 33-kV cabling and the substations required along the route. Figure 2.2-11 illustrates the power generation and EHT supply architecture.

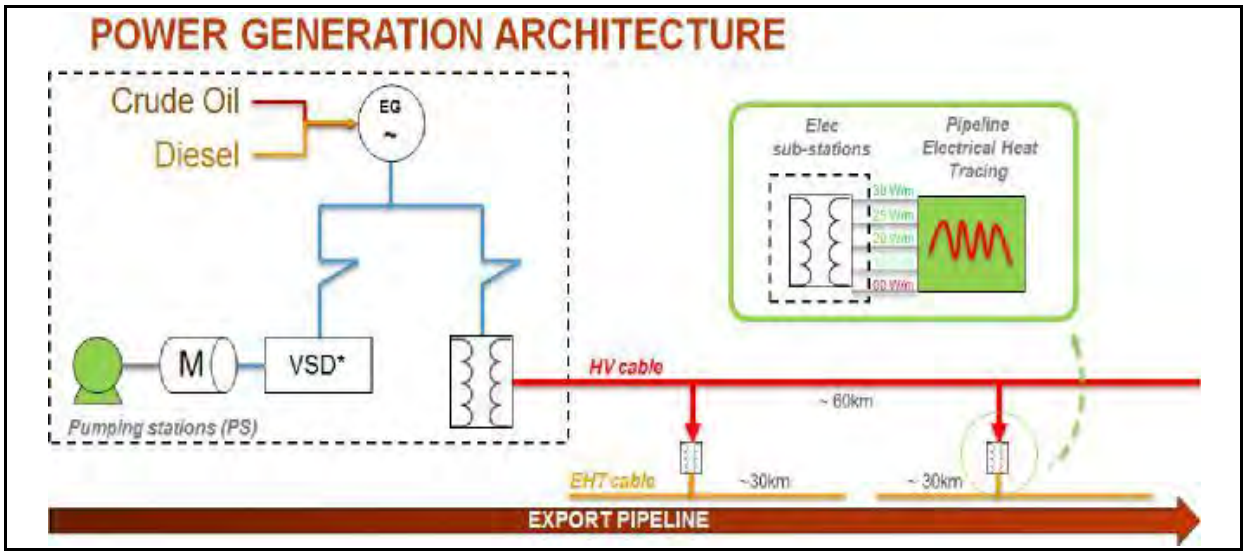

Figure 2.2-11 Power Generation Architecture

NOTES: M – motor; VSD – variable speed drive; EG – engine-driven generator

The electrical distribution network to support the trace heating system of the project will require both 22- and 33-kV cabling and several electrical substations to support the EHT operations. Figure 2.2-12 shows the electrical distribution system with power provided by the pumping stations and the expected distance between each of the electrical substations.

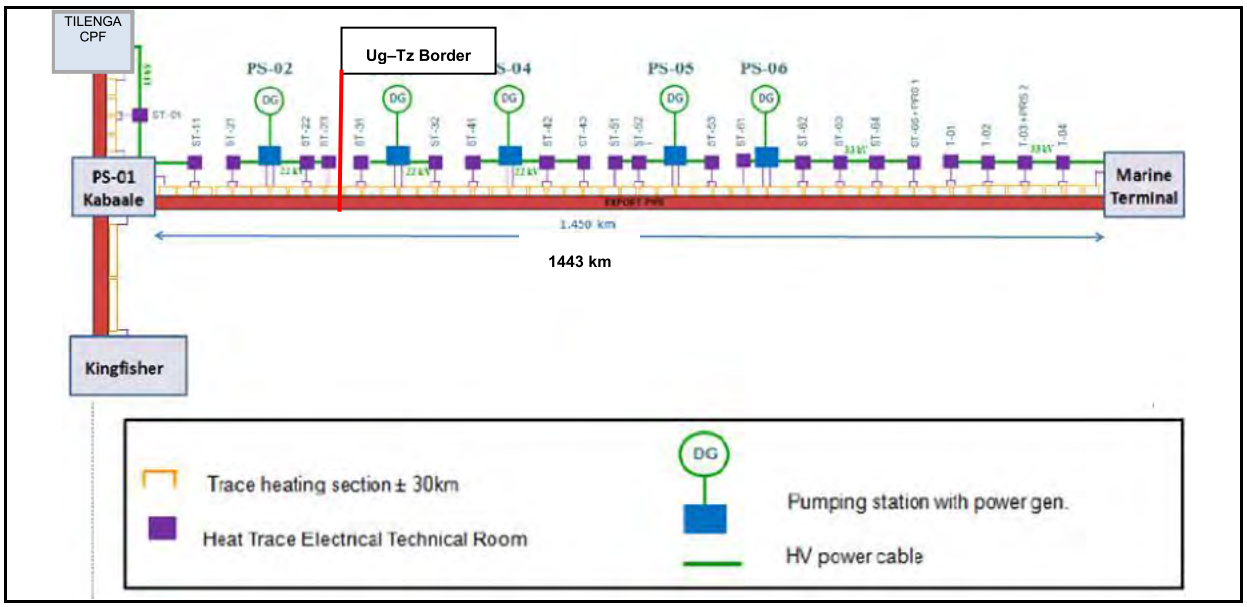

Figure 2.2-12 Electrical Distribution System

NOTE: DG – diesel generator (can also use crude oil as fuel)

As the FEED technical scope advances, the spacing of the electrical substations may be refined, potentially reducing the number.

Block Valve Stations

Block valve stations will be installed to safeguard the environment in the event of a rupture, and for pigging and maintenance. The numbers and locations of block valve stations will be determined by considering engineering requirements, access for repair and regular maintenance, and environmental and social aspects. The initial design basis will consider if there is to be a standard spacing arrangement for pipeline section isolation or at critical areas related to major river and roads crossings and active geological fault zones. In addition to the block valve stations, the pipeline design will consider a leak detection system (fibre optic cable) that will be installed for the entire pipeline route.

Permanent Access Roads

Permanent access roads will be dual lane and constructed using local materials. During the construction phase, when roads will be used extensively, graders will be used for maintenance. After completion of the construction phase, the roads will be reconfigured for lower maintenance.

2.2.6 Associated Facilities

2.2.6.1 Introduction

The IFC definition of associated facilities as specified in the IFC Performance Standard 1, paragraph 8: associated facilities are “facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.” This can

therefore apply to both new and existing developments if project requirements exceed the facility's capacity and significant expansion is required.

Associated facilities are likely to require an ESIA before construction or expansion due to regulatory requirements (mandatory EIA activities) and potential for environmental and social impacts. In addition, associated facilities are subject to cumulative impact assessment as part of the ESIA (see Section 7.2.3). The projects' cumulative impact assessment will draw on the associated facilities' ESIAs that will require approval by NEMA.

2.2.6.2 Project Associated Facilities

In Uganda, the following developments are defined as associated facilities:

- Tilenga project including the production field and the CPF. The upstream Tilenga project CPF will provide support to the feeder pipeline including:
  - housing the bulk heater and the pumping station required to heat the oil from 70°C to 80°C and to pump the oil to the Kabaale Hub
  - electrical power for the feeder pipeline's heat tracing
  - electrical power to operate the Kabaale Hub pumping station
- upgrades to the existing road network that are not executed by the project.

2.2.6.3 Potential Project Associated Facilities

Third parties could develop the following facilities specifically for project requirements, especially during the construction period:

- waste management facilities
- borrow pits and aggregate extraction sites
- concrete batch plants
- helipads.

Information on the associated facilities will be defined as FEED studies progress and project requirements and availability of in-country providers for materials and services are evaluated.

2.3 Project Activities

2.3.1 Pre-construction

2.3.1.1 Geotechnical and Geophysical Survey

Geotechnical and geophysical investigations are required to finalise the pipeline route corridor to address the following:

- identification of potential geological hazards along the proposed pipeline route corridor
- determination of construction-related logistics for rock blasting, fault-line construction, engineered retaining structures and unrestrained pipe sections
- identification of the need for typical and site-specific mitigation strategies to be implemented during construction.

This requires the drilling of boreholes and seismic surveys to establish terrain conditions, which includes:

- boreholes (from 6 to 60 m depth) and observation wells (piezometers)
- geophysical lines with individual lengths from 300 m to 5000 m (weight and strike plate, no charges involved)
- observation pits at fault locations, geological mapping, electromagnetic and microgravimetry, and electrical resistivity tomography.

The project is seeking regulatory approval for the geotechnical and geophysical surveys through the development and submission of a project brief to execute the surveys. It will include an environmental and social management plan consisting of the following main components:

- advance team to work with stakeholders to avoid or limit environmental, social and cultural impacts to the minimum extent feasible
- project oversight of activities by the contractor
- environmental due diligence to ensure that no substance-affected soil remains
- land to be reinstated as far as practicable to its state before construction.

2.3.1.2 Early Works

For construction work to begin on the Tilenga feeder pipeline and the EACOP project, some preparatory activities, commonly referred to as early works, are required. Early works provide the required facilities needed for construction to start in locations where there is no existing infrastructure, e.g., accommodation, access roads, coating plant and pipe yards. A contractor other than the pipeline construction contractor is likely to undertake the early works, as those activities are before the EACOP System financial investment decision.

For the projects, early works will include initial preparatory works for the planned construction camp and pipe yard, a coating plant to ensure that insulated pipe will be available when construction starts, and the upgrading of existing roads and the construction of new access roads to these facilities.

Scoping-level impacts from the activities have been considered in this Scoping Report and the plan is to consider them in the ESIA.

In the event that the activities of early works need to be expedited for schedule purposes, regulatory documentation will be submitted for approval.

2.3.2 Construction

2.3.2.1 Pipeline Construction Strategy

The current Uganda pipeline construction plan includes the use of one construction spread for the export pipeline and one spread (F1) for the Tilenga feeder pipeline; see Figure 2.3-1. The requirement for one spread was established based on topographical features and a balancing of assigned distances while considering the types of terrain along the route.

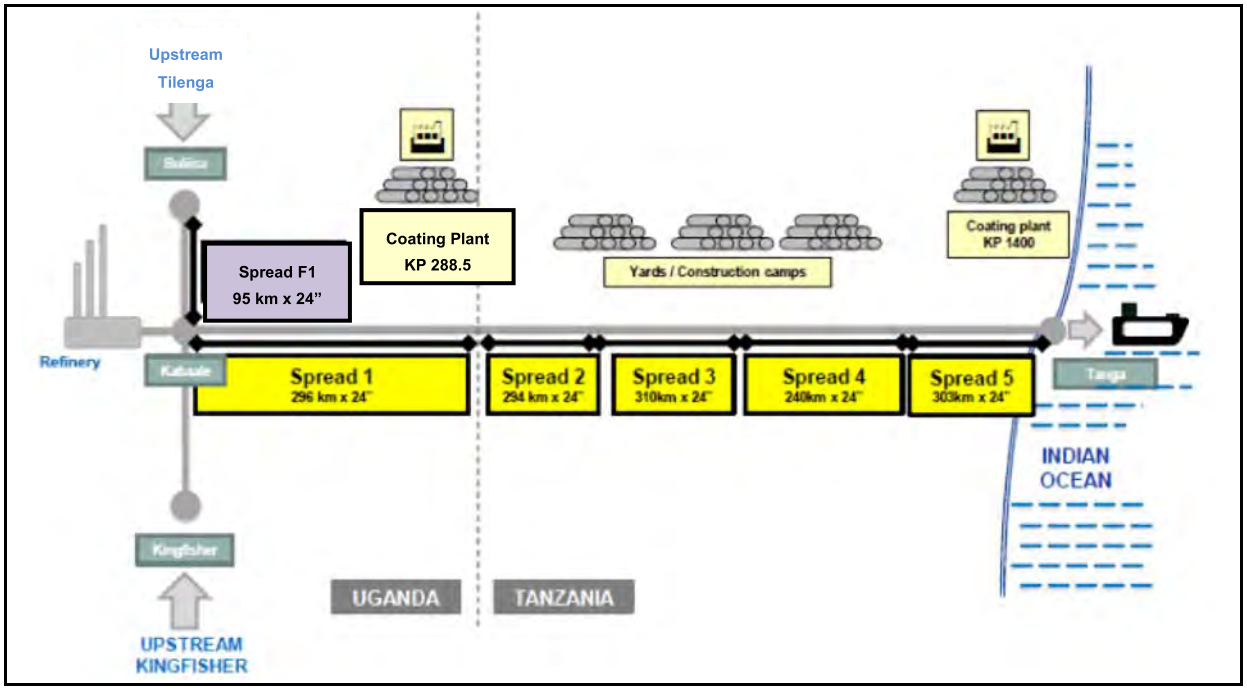

Figure 2.3-1 Indicative Pipeline Spread Diagram

A pipeline RoW with temporary workspace will be acquired to construct, operate and maintain the pipeline and associated facilities throughout its 25-year lifespan. Construction and installation of the pipeline will require a 30-m-wide RoW, of which 10 m will become the permanent operational RoW and the remainder will provide workspace during construction. The construction RoW could be wider in some areas, influenced by specific terrain conditions such as sandy terrain or wetlands.

Land will be acquired for permanent structures such as AGIs (pumping stations, pressure reduction stations and the line pipe heat-tracing power supply and distribution substations), as described in Sections 2.2.3.2 and 2.2.5.2, and permanent access roads (Section 2.3.2.8) and camps (Section 2.3.2.6).

2.3.2.2 Pipeline Construction

When the centreline of the construction RoW has been surveyed, the workspace has been marked for the RoW and the land access and compensation process has been completed, the following sequence of construction activities will be undertaken:

- RoW clearing and grading: The 30-m-wide RoW will be cleared, topsoil will be separated and stockpiled, and low silt fences will be installed to control erosion.
- stringing: A section of pipe will be placed along the pipeline RoW.
- bending: Where required, pipe will be bent to accommodate elevation and directional changes.
- welding: The pipe sections will be prepared and welded together.
- non-destructive testing: During this stage, the welded joints are inspected to ensure the welds meet the standards required.
- field joint coating: A coating will be applied to the pipe joint areas after they have been welded.

- ditching: Excavated soil from the 1.8–2-m-deep ditch will be placed adjacent to the ditch. The subsoil will be used for pipe cover and ditch filling, and the stored topsoil for reinstating the RoW.
- padding, lowering-in and backfilling: Before the pipe strings are lowered into the ditch, selected padding (sand or screened material from the ditch) is placed on the ditch bottom to cushion the pipe. Side booms lift the string and lower it into the ditch, after which ditch spoil is pushed back in to cover the pipe.
- buoyancy control will be designed and, during construction, installed in areas that are subject to a high water table (groundwater level) and seasonal flooding
- hydrostatic testing: The pipeline is filled with water and pressured to higher than the operational pressure. See Section 2.2.3.2 for an additional description of hydrostatic testing.

Pipeline construction will require the following mostly specialist equipment:

- bucket machines for ditching
- stringing trucks to move the pipe from the pipe yards to the RoW
- welding and joint coating
- pipe layer (side-boom) cranes to lift the pipe into the ditch
- bulldozers and graders to fill the ditch
- ploughs and reseeding equipment for reinstatement.

Upon construction completion, the RoW will undergo final cleanup and reinstatement that includes replacement of the stockpiled topsoil and the installation of erosion control structures and materials. Only a 10-m-wide corridor over the pipeline will be kept clear of buildings and trees for maintenance and inspection access. Figure 2.3-2 depicts the temporary RoW required for construction and the RoW for pipeline operation.

One of the pipeline route-selection criteria was to reduce crossings on infrastructure and watercourses. However, due to the distance covered, the pipeline will require an estimated 120 crossings, as shown in Table 2.3-1.

Table 2.3-1 Uganda Crossings

Type of Crossing	Number	Length (m)
Murram roads	92	1380
Tarmac roads	4	120
Perennial rivers	4	2068
Perennial streams	1	45
Ephemeral streams	18	1658
Power line	1	15
Total	120	5286

Crossings will be achieved with a minimum of interference by boring under tarmac and heavily used murram roads. All streams in Uganda will be crossed by an engineered open-cut method. This includes a baseline study of the watercourse,

including aquatic resources, the engineering of the watercourse crossing, i.e., temporary water retention system or bypass (if water flows are present) and excavation of the trench. The method facilitates swift completion and limits disturbance downstream. Seasonal watercourses will be crossed during the dry season as far as possible.

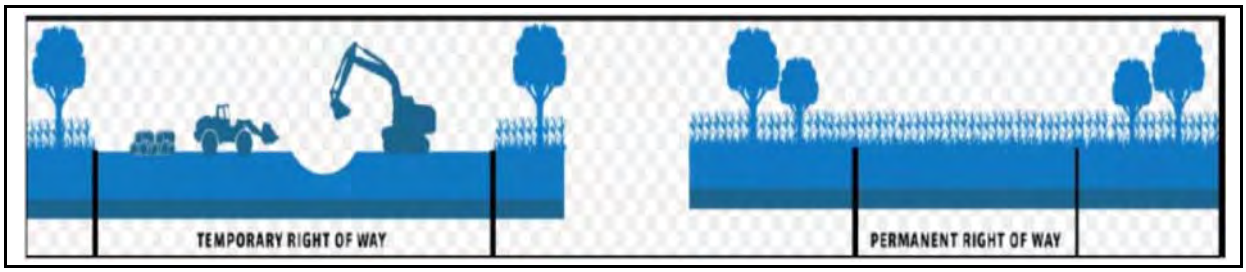

Figure 2.3-2 Construction and Operation Rights-of-Way

2.3.2.3 Resources and Local Resourcing

Construction Materials

The required construction materials will need to be sourced both inside and outside Uganda.

Construction materials sourced in Uganda:

- cement
- gravels and murram
- sand
- fencing
- cement block camp housing and office building required construction materials.

Required quantities of materials and suppliers sourced in Uganda will be determined in the later stages of the FEED process and reported in the ESIA.

Construction materials sourced outside Uganda include:

- pipe
- pipe coating materials
- pipe insulation materials
- heating equipment including heat tracing
- fibre-optic cable
- valves and metering equipment.

The project intends to maximise local sourcing to support construction by:

- using Ugandan companies for the provision of goods and services
- purchasing and using goods produced or manufactured in Uganda
- investing in training and technology transfer with the objective of enhancing the performance or capacity of local companies.

This approach intends to stimulate the development of local companies and encourage local investment and participation.

Water Requirements

The project estimates for water requirements are:

- construction camps – potable water 200 m^3/day at maximum occupancy (up to 1000 people)
- construction activities – 100–200 m^3/day, estimated
- hydrostatic testing – 20,000 m^3 required, see Section 2.3.3.2
- coating plant requirements – 94 m^3/day, estimated.

The coating plant will have an associated camp for accommodating up to 120 people (to be confirmed) and typically require approximately 24 m^3/day for the camp and 70 m^3/day for operations.

The project has completed a desk-based investigation that identified potential surface and subsurface water sources, associated transportation options and preliminary environmental effects.

Though the study indicates that potential water sources to meet project requirements are available, an additional study based on field observations will be conducted after scoping to establish actual availability. The results of this study will be used during the preparation for the ESIA report.

2.3.2.4 Labour

The size of the labour force will vary over the construction phase. At the start of construction, about 200 skilled and unskilled personnel are needed to construct the camps and pipe yards, pipe coating plant and access roads.

Construction of the pipeline will require several thousands of direct and indirect support personnel. As the project is in the FEED phase at the time of the preparation of this Scoping Report, personnel plans continue to be progressed. The number of personnel working on project construction is expected to be about 1000 skilled and unskilled personnel for the export pipeline spread and, and plans are to use the same personnel for construction of the Tilenga feeder pipeline spread. As mentioned previously, the final number of construction spreads required in Uganda will be subject to ongoing engineering design optimisation.

2.3.2.5 Temporary Construction Infrastructure

After the completion of early works, construction will start on the temporary facilities required to support pipeline construction. Figure 2.2-7 shows locations of temporary construction facilities. Five main camps with associated pipe yards, a coating plant and dedicated access roads and upgrades of the existing road network will be required in Uganda. Temporary truck stops where drivers can refuel and rest could also be needed.

2.3.2.6 Temporary Camps

The main camps will have a maximum capacity of 1000 beds and contain a pipe storage yard as well as fuel storage, a sewage treatment facility and waste management yard, road allowance and possibly a helipad. Temporary land access for a 17.5-ha footprint will be negotiated for the temporary camps. The configuration

of the camp components is flexible allowing for optimisation of the footprint to reduce environmental, social and cultural effects.

Camp construction will require the following equipment:

- bulldozers and graders for site preparations
- tippers for materials
- backhoes for excavation
- cranes, forklifts and cement mixers for construction.

As required, camps can accommodate 100% of the workforce. In some areas, it will be possible for workers to commute from their homes; the project's aim is for commutes to be less than 50 km.

2.3.2.7 Pipe Coating Plant

The FEED studies include logistics studies that have a large influence on determining the number of resources required for the project. At the time of writing (July 2017), the design basis includes, for the entire pipeline, up to two pipe coating plants located near the pipeline route adjacent to infrastructure required to move raw pipe for coating and coated pipe for installation. One of these pipe coating plants is identified for construction in Uganda. However, this may change as FEED progresses. The coating plant will require capacity to store about one-third of the pipe needed for the project.

Various alternatives for coating of the pipe were evaluated and it was decided that the most efficient process would be the importation of the carbon steel pipe and coating materials and the coating process executed close to the pipeline route. Pipe will be brought in via Tanga Port and transported to a pipe buffer yard in Tanzania From there, the pipe and coating materials will be transported to the pipe coating plant, which contains the following components:

- coating process area
- insulation process area
- welding area
- coating operation space
- pipe storage yard and insulated pipe storage yard.

In addition to the processing areas, there will be a camp to accommodate approximately 300 workers, comprising the facilities mentioned in Section 2.3.2.6.

2.3.2.8 Temporary Access Roads and Upgrades on Existing Roads

Temporary access roads will be constructed to connect the current existing road network to temporary facilities and construction corridor. There will be variations in the lengths of access roads required. Most access roads will be from a few hundred metres to approximately 5 km with a combined distance of approximately 10.5 km (Table 2.2-2).

Access road construction will require the following equipment:

- bulldozers and graders for route preparation
- compactors for surface compression

- excavators for trenching
- pavers for surface preparation.

Upgrades of National Roads

The Government of Uganda and Partners have identified the critical oil roads that must be upgraded by the Uganda National Roads Authority to achieve First Oil by 2020, including:

- Buhimba–Nalweyo–Kahindu–Kakumiro Road (100 km)
- Lusalira–Nkonge–Sembabule Road (97 km)
- Kyotera–Rakai Road (20 km).

2.3.2.9 Truck Driver Rest Stops

The truck driver rest stops will be sited alongside major roads used for transport of materials and equipment, and will include facilities for drivers to rest and vehicle refuelling. The number, locations and detailed specifications for the truck driver stops will be finalised during FEED.

2.3.3 Pre-Commissioning and Commissioning

2.3.3.1 Overview

When the EACOP System is constructed, including all the AGIs, the pipeline will be commissioned. This activity will include introducing oil into the pipeline from the Tilenga project CPF in Uganda.

Before this, the following core pre-commissioning activities will have to be completed:

- controls and instrumentation system to be checked and verified as fully functional
- all sections to be hydrostatic tested and dried, described below (Section 2.3.3.2), and verified for pressure containment
- cleaning and gauging pigs to be launched and pushed through the pipe
- all sections to be confirmed ready for safe transport of hydrocarbons
- all communications systems to be checked and verified
- operations personnel to be trained and in place for ongoing pipeline operations.

When all these activities are completed, and the MST has confirmed that it is ready to receive, oil will be introduced in a controlled way until it arrives at the MST.

A detailed and dedicated procedure at the MST will be implemented before it is commissioned so that oil that has arrived at the MST can be received safely.

Following detailed checks on all systems, successful transport of oil to the MST and storage testing of the tanks, commissioning of the pipeline and MST will be complete.

2.3.3.2 Hydrostatic Testing

The constructed pipeline will be hydrostatically tested to ensure pipeline integrity and strength based on relevant standards and project requirements. Each completed section of pipeline will be filled with water and pressurised for a required time to identify any potential defects, after which the pipeline section will be dewatered in a controlled way. The displaced water then will be reused to test the next section. Upon completion of the hydrotesting, the water will be discharged at a suitable and approved location.

Hydrostatic testing will be subject to a FEED study, which will identify suitable locations and methods for test water abstraction and discharge, length of hydrotesting sections, necessity of additives (e.g., corrosion inhibitors) and requirements for water testing before discharge. The study will inform the part of the ESIA on hydrostatic testing.

2.3.4 Operations

2.3.4.1 Pipeline

Pipeline operations of the project in Uganda encompass an operational perimeter of approximately 391 km (feeder pipeline and export pipeline), two pumping stations, bulk heating, power generation and EHT.

Operational personnel will be trained to operate and maintain all the equipment to ensure safety, integrity and reliability. The export oil, due to its waxy nature, requires a temperature above 50°C as described in Section 2.1.1, to maintain flow. The oil enters the Tilenga feeder pipeline at 80°C; when operating at full capacity, the oil will not require additional heating over the pipeline's length. Backup heating will be provided by EHT installed along the complete distance of the pipeline. Some bulk heaters will provide additional heating capacity required during periods when the pipeline is operated at lower capacity. Regular pigging will maintain optimal flow by removing wax deposits.

A main control room for the pipeline will be located at the Tilenga CPF and a back-up control room with the export control room will be located at the MST facility in Tanga where the terminal operations will be coordinated. Automation capabilities with special focus on a remote start–stop control will be critical to ensure the emergency response time in unmanned areas is adequate.

Daily operations will follow work permit procedures, and activities will be coordinated during daylight hours only. Maintenance and inspection activities will be executed in maintenance campaigns to complete scheduled interventions required to retain the integrity and reliability of the installations.

Security surveillance will be maintained at all the AGIs 24 hours a day and assisted remotely from a security control room in the Tilenga CPF and MST CPF. Operations and maintenance activities will require logistical coordination to keep personnel and installations safe and secured. Security planning for the operational RoW will be developed at a later stage. Ongoing management and monitoring of erosion control and reinstatement will also be undertaken.

The FEED study will also identify the number and location of the emergency repair teams for the pipeline as well as all necessary equipment, procedures and staff to manage abnormal operation and incidents.

2.3.4.2 Labour

As mentioned in Section 2.1.2 and Section 2.3.2.4 regarding construction labour, the project is in the FEED stage at the time of preparing this Scoping Report and operation personnel plans continue to be progressed. However, it can be assumed that about 100 people, both directly and indirectly, will be employed during the projects' operation. This will include control room technicians, company office staff, community office personnel, and operations and maintenance staff.

2.3.5 Decommissioning

2.3.5.1 Demobilising Temporary Construction Facilities

A demobilisation plan for the temporary construction facilities will be developed, which includes a social management component that addresses the impact of decommissioning (loss of jobs, economic activity). In addition, the plan will ensure that all the project components that were required for constructing the pipeline, but that will no longer be required during the operational phase, are removed and land is returned to the original users. This will be based on the following principles:

- engagement with stakeholders at local, district and regional levels to determine potential use of all redundant equipment and structures
- project structures to be removed from land that is no longer required for operations
- environmental due diligence to be conducted to ensure that unplanned substance-affected soil is managed
- land to be reinstated to a capability similar to that which existed before pipeline construction
- land to be returned to the original owners or users.

2.3.5.2 Pipeline Decommissioning

When upstream oil production diminishes to the point that it becomes uneconomic to produce and if there are no additional volumes coming from third parties, states or partners, the pipeline will be decommissioned based on Ugandan regulations and standards, and international standards and protocols. This will be based on the following principles:

- engagement with stakeholders at local, regional and district levels to determine potential use of all redundant equipment and structures
- project structures to be removed from land that is no longer required for operations
- environmental due diligence to ensure that no substance-affected soil is managed
- land to be reinstated to a capability similar to that which existed before pipeline construction

A decommissioning plan, which includes a social management component that addresses the impact of decommission (loss of jobs, economic activity), will be prepared and the scope will be developed in consultation with stakeholders at that time.

2.4 Health, Safety, Security, Social and Environment

The pipeline project team (PPT) objective is for the pipeline to be designed and executed in an environmentally sustainable way and with adequate safeguards to protect the health and safety of project employees and the people who live in communities adjacent to the project. Environment, health and safety concerns could arise at any time, which is why guidelines will be strictly applied and vigilance maintained across all day-to-day operations.

Construction and operation of a 24-inch-diameter crude oil pipeline does not require the execution of activities that create high-risk to either the workforce or surrounding population. The construction and operation of pipelines is well understood and based on extensive global pipeline experience. However, all construction activities have risks that, if manifested, can have an effect on the workforce's occupational health and safety. This will be addressed in the project health, safety, security, social and environment (H3SE) management plan that will be developed for all project phases. The plan will consider potential hazards associated with pipeline installation, e.g., excavation, lifting, confined spaces, and working in a tropical environment. The plan will provide guidance for the project's contractors, allowing them to develop their own fit-for-purpose H3SE plans that meet project requirements.

Workers will work shifts in compliance with Ugandan occupational safety and health requirements, be properly inducted, have or receive training for relevant skills and experience, wear appropriate personal protection equipment and have access to support facilities such as camps with the required amenities, meals and healthcare.

Extensive movements of vehicles, including cars, truck and trailers, on the public road network will be required. This activity will be mitigated through measures such as journey management planning, safe road design and measures mentioned below.

A road traffic study prepared as part of the ESIA will:

- identify present road use patterns and the potential effects that project traffic could have on these patterns
- develop scenarios that reduce the number of vehicle movements
- identify areas of higher risk and those to be avoided
- propose appropriate mitigation measures.

The project will implement journey management planning that will consider the guidance from the traffic study. The planning intends to:

- reduce the number of vehicle movements
- ensure compliance with speed limits using in-vehicle monitoring
- ensure vehicles are in good condition by requiring vehicle inspection
- ensure drivers are properly trained by requiring defensive driving training.

The safety of project employees and stakeholders will be ensured, as well as that of their facilities and products. Safety is a core project value that is shared with everyone, from managers and employees to partner companies and local stakeholders.

Because the energy industry is inherently exposed to numerous risks, the project will champion safety as its highest value. The project will operate in the host countries with government, civil society and local stakeholder support. The project needs to show its ability to operate safely.

The project commitment will be reflected in the H3SE plan, which aims to instil a safety culture underpinned by 12 golden rules (see Figure 2.4-1).



Figure 2.4-1 The Projects' 12 H3SE Golden Rules

To operate in a truly safe environment, everyone must fully embrace these rules and make the related behaviours a natural part of their daily work. With this in mind, the focus will be on three key levers, as stated below:

- project employees' personal commitment. Project employees' involvement and experience are essential, as safety starts with their accountability. Employees will be encouraged to report any incidents or anomalies that they might witness. To symbolise this principle and make it easier to implement, a stop card has been created so that every member of the project can participate in the prevention of safety hazards, identify improvement drivers and facilitate experience sharing.
- the management team's commitment. The entire company should support personal involvement. The project's managers have a key role to play in reminding everyone about the everyday importance of safety and in organising training on safety rules and procedures. All employees across all sites can use safety risk mapping systems to help improve prevention.

- project stakeholders' commitment. Safety is everyone's responsibility. It concerns both project employees and its partner companies, as they also play a major role in the operations. This is why safety criteria are a determining factor when the project chooses its partners, who are thereafter governed by strict specifications. In particular, the project ensures that the partners follow its 12 golden rules and carefully supervises all of their missions.

2.5 Waste Management

During the construction phase, different waste streams will be generated from the following locations and activities:

- camps – will generate household waste and sewage. All camps will be operated with sewage treatment plants to meet regulatory sewage discharge requirements. Waste will be recycled and processed at camp facilities as achievable. Waste that cannot be recycled or processed at camps will be transported to facilities that have the required Ugandan approvals.
- pipe coating yard – remnants of insulation materials will be generated
- construction RoW – apart from the hydrotest water disposal requirements mentioned in Section 2.3.2.3, other wastes will be generated while clearing the RoW, for example cleared vegetation, material that cannot be used to refill the trench, excess construction materials, field joint coating, waste generated by workers. Excavated materials that will be used for reinstatement, such as topsoil, subsoil and parent material, will be stockpiled and used to refill the trench, thus keeping waste to a minimum.

The project will develop a construction Waste Management Plan (WMP) to ensure appropriate management of these wastes as shown in Figure 2.5-1, based on regulatory requirements, international best practice and joint venture partner company standards.

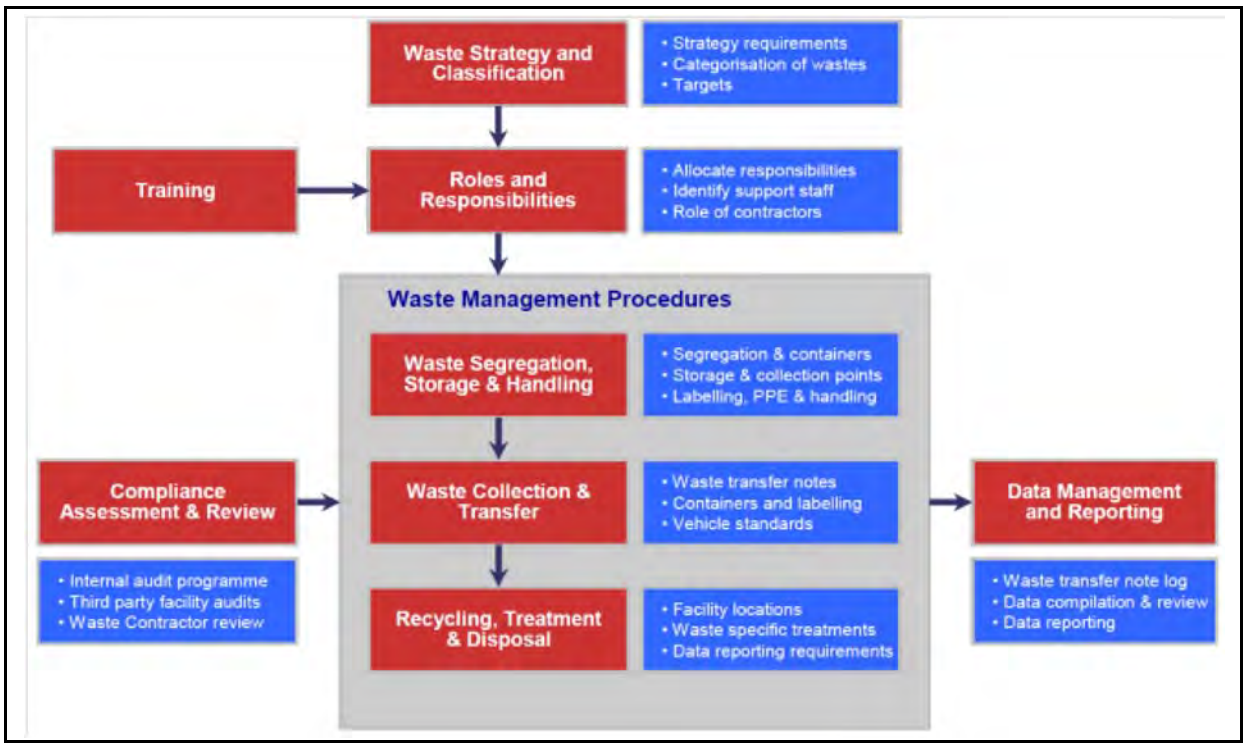

Figure 2.5-1 Waste Management Plan

The objectives of the WMP will be to:

- identify all sources of nonhazardous and hazardous waste, including solids and liquids associated with constructing and operating the pipeline
- comply with the Ugandan legislative and regulatory requirements and project-defined environmental and waste requirements
- as far as practicable, manage waste according to the waste management hierarchy (reduce, reuse, recycle, recover, responsible treatment and disposal) and treat waste at dedicated facilities associated with the project, close to the source of generation where practicable or allowed by the government
- evaluate the performance standards of all third-party waste management companies receiving project waste assign responsibilities and funds for implementing the WMP and recording the verification and monitoring measures.

During operations, when smaller quantities of waste are generated, an operational waste management plan will be followed.

The crude oil will only be treated at the Tilenga Project CPF. Power generation by a combination of diesel generators and heaters fired by the crude oil will generate emissions along the pipeline route. The emissions will be assessed in the ESIA.

2.6 Schedule

Figure 2.6-1 shows a high-level project schedule including the projects' phases up to commissioning.

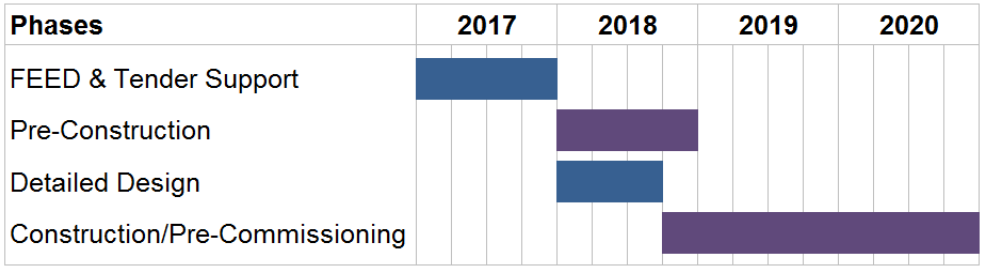

Figure 2.6-1 High-Level Projects Schedule

NOTES: FEED & Tender Support – front-end engineering and design, including support to tenders for construction; Pre-construction – includes access roads, coating yard, main camps and pipe storage yards; Pre-Comm. & Comm. – pre-commissioning and commissioning

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3 LEGISLATIVE, POLICY AND ADMINISTRATIVE FRAMEWORK, PERMITTING REQUIREMENTS, AND INTERNATIONAL STANDARDS AND GUIDELINES

3.1 Introduction

This section, focusing primarily on project relevant environmental and social aspects, includes:

- the legislative, policy, regulatory and administrative framework
- permitting requirements
- international conventions and agreements that Uganda has signed, acceded or ratified
- international standards and guidance on best practice.

3.2 Legislative, Policy, Regulatory and Administrative Framework

3.2.1 Legislation

Table 3.2-1 summarises the legislation and sections that are or may be relevant to the project. The regulations considered to have the greatest relevance to the project are presented first. These are the National Environment Act, Cap 153, 1995; Petroleum (Exploration, Development and Production) Act 3, 2013; Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act 4, 2013, and Occupational Safety and Health Act, 2006.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
National Environment Act Cap 153, 1995 *currently under government review*	The National Environment Act provides for: • sustainable management of the environment • Provides for general principles of environmental protection some of the most relevant are: (a) to assure all people living in the country the fundamental right to an environment adequate for their health and well-being (b) to encourage the maximum participation by the people of Uganda in the development of policies, plans and processes for the management of the environment (d) to conserve the cultural heritage and use the environment and natural resources of Uganda for the benefit of both present and future generations (h) to publish relevant data on environmental quality and resource use (i) to require prior environmental assessments of proposed projects which may significantly affect the environment or use of natural resources. • the establishment of the National Environment Management Authority (NEMA) as the principal government agency for the management of the environment • a project proponent to submit a project brief to NEMA, using the prescribed form, based on which NEMA determines whether a project or activity may have, is likely to have or will have significant impact on the environment, and if an environmental impact study will be conducted. Part VI of the Act (Sections 24-32) provides for establishment of environmental standards for air, water, effluents, noxious odours, noise, vibration, soil quality, radiation and other standards. Specific environmental standards are prescribed in the respective National Environment regulations (see Table 3.2-3). The Act also includes several other provisions that are relevant to project activities. • Section 36 lists prohibited activities in a wetland: • reclaiming or draining any wetland • erecting, constructing, placing, altering, extending, removing or demolishing any structure that is fixed in, on, under or over any wetland • disturbing any wetland by drilling or tunnelling in a manner that has or is likely to have an adverse effect on the wetland • depositing in, on or under any wetland any substance in a manner that has or is likely to have an adverse effect on the wetland • destroying, damaging or disturbing any wetland in a manner that has or is likely to have an adverse effect on any plant or animal or its habitat. • Section 41 provides guidelines for conservation of biological diversity, including specification of national strategies, plans, and programs for conservation and sustainability. • Section 49 requires NEMA, with the assistance of local environment

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
	committees, district environment committees and the lead agency, to identify those elements, objects and sites in the natural environment which are of cultural importance to the various peoples of Uganda. • Third Schedule of the National Environment Act lists the following activities considered for environmental impact assessment relevant to the project: • all roads in scenic, wooded or mountainous areas • airports and airfields • pipelines • water transport • drilling for the purpose of utilising ground water resources • mining, including quarrying and open-cast extraction of aggregates, sand and gravel • clearance of forest areas • electricity generation stations, transmission lines and substations • waste disposal including major atmospheric emissions.
Petroleum (Exploration, Development and Production) Act 3, 2013	This Act, also known as the Upstream Act, repeals the Petroleum (Exploration and Production) Act, 1985 as revised in 2000. This Act effects Article 244 of the Constitution (see above). The Act's main aims are to: • regulate petroleum exploration, development and production • establish the Petroleum Authority of Uganda (PAU) • provide for the establishment of the National Oil Company • regulate the licensing and participation of commercial entities in petroleum activities • provide for an open, transparent and competitive process of licensing • create a conducive environment for the promotion of exploration, development and production of Uganda's petroleum potential • provide for efficient and safe petroleum activities • provide for the cessation of petroleum activities and decommissioning of infrastructure • provide for the payment arising from petroleum activities • provide conditions for the restoration of derelict lands. The Act outlines the environmental principles to which all licensees will comply, including the duty to comply with the principles of the National Environment Act. This includes the duty to manage waste arising out of petroleum activities in accordance with the National Environment Act and all applicable legislation and contract a separate entity to manage the transportation, treatment and disposal of waste arising from petroleum activities (Section 3). On state participation and national content: "the licensee, its contractors and subcontractors shall give preference to goods which are produced or available in Uganda and services which are rendered by Ugandan citizens and companies" (Part VIII).

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act 4, 2013	The Act: • establishes a legal framework to ensure that midstream operations in Uganda are carried out in a sustainable manner. The objectives of the Act are to regulate, manage, coordinate and monitor midstream operations; to enable the construction, placement and ownership of facilities; and to provide for third-party access to facilities and to regulate tariffs for facilities. • outlines the duty of the licensee to comply with environmental principles under the National Environment Act, including management of transportation, storage, treatment and disposal of waste arising from midstream operations (same as Upstream Act requirements) (Section 3). • promotes state participation and national content in midstream operations (Sections 52–55).
Occupational Safety and Health Act, 2006	The Act provides for the general safety, health and environmental requirements for the workplace to be applied during the construction and operational phases of a project, including obligations to inspect statutory equipment and register workplaces. The Occupational Safety and Health Act consolidates, harmonises and updates the law relating to occupational safety and health, and repeals the Factories Act, Cap 220.
Constitution of the Republic of Uganda, 1995	Constitutional objectives and articles relevant to the protection and management of natural resources and land are: • Objective XIII: The state will protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. • Objective XXIV obliges the state to promote and preserve those cultural values and practices which enhance the dignity and well-being of Ugandans. • Objective XXV obliges the state and citizens to preserve and protect the culture of preservation of public property and Uganda's heritage. • Objective XXVII (i) obliges the state to promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for present and future generations. • Objective XXVII (ii) states utilisation of natural resources of Uganda shall be managed in such a way as to meet the development and environmental needs of present and future generations of Uganda and obliges the state to take all possible measures to prevent or minimise damage and destruction to land, air and water resources • Objective XXVII (iii) stipulates that energy policies, implemented by the state, should ensure that people's basic needs and those for environmental preservation are met. • Article 26 enshrines the right of every Ugandan to own property and specifies the conditions under which these rights may be waived in the public interest. • Article 36 states the right of minorities to participate in decision-making processes such as national plans and programmes.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
	• Article 39 enshrines the right of every Ugandan to a clean and healthy environment. • Article 237 (2b): the government holds in trust for the people, and is required to protect, natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological or tourism purposes for the common good of all citizens. • Article 237 (3) defines land tenure systems: customary, freehold, mailo and leasehold. • Article 237 (2a): The government or a local government may acquire land in the public interest subject to article 26.. • Article 244: Parliament is mandated to pass laws for regulating the exploitation of minerals and petroleum; the sharing of royalties arising from oil exploitation; the conditions for payment of indemnities arising out of exploitation of petroleum and minerals; and the restoration of derelict lands.
Access to Roads Act, Cap 350	The Act provides for: • the procedure by which a proponent may obtain access from a public highway. The proponent is to consult adjoining landowners before the construction of access roads to project facilities. • the establishment of a legal regime to limit damage to land adjoining the access road, for maintenance of the access road, and for payment of compensation by the applicant in respect of the use of land, the destruction of crops or trees and such other property • a proponent, who is unable through negotiations to obtain leave from adjoining landowners to construct a road of access to the public highway, to apply to a magistrate for leave to construct a road of access over any land lying between his land and the public highway.
Atomic Energy Act, 2008	The Act establishes the Atomic Energy Council and prescribes the authorisation process required for use of ionising radiation.
Employment Act, 2006	The Act: • mandates labour officers to conduct regular inspections to ensure workers' rights are observed, basic provisions are made and workers' welfare is attended to • provides for the freedom of association of workers, permitting them to join labour organisations. Similar provisions are supported in the Labour Unions Act, 2006.
Equal Opportunities Commission Act, 2007	The Act: • establishes the Equal Opportunities Commission • mandates the Commission to investigate practices of that undermine equal opportunities.
Explosives Act, Cap 298	The Explosives Act provides for: • the legal regime for the importation, manufacture, storage and use of authorised explosives and blasting materials • permitting the manufacture, sale, storage and handling of explosives.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Fish Act, Cap 197	The Act provides for: • the control of fishing, the conservation of fish and purchase, sale, marketing and processing of fish • Section 12 (4) stipulates that "except where otherwise expressly provided by any written law, no person shall divert the waters of any lake, river, stream, pond or private waters in which fish, their eggs or progeny have been introduced with the consent of the chief fisheries officer" • the proponent to liaise with the chief fisheries officer to obtain approval for the designs of proposed water abstraction facilities.
Historical Monuments Act, Cap 46	Section 8 of the Act provides for: • the protection of objects declared to be preserved or protected under the Act and outlines activities that will be prohibited where such objects are found • any person who discovers any object that may reasonably be considered of archaeological, paleontological, ethnographical, historical or traditional interest will, within 14 days, report it to the conservator of antiquities, a district commissioner or the curator of the museum (Section 11).
Illiterates Protection Act, Cap 78	The Act provides for: • the protection of illiterate persons in relation to writing and signing of documents on behalf of such persons • the proponent to ensure adherence to this Act during any writing, signing or endorsement of documents pertaining to land acquisition or compensation related to the project.
Labour Disputes (Arbitration and Settlement) Act, 2006	The Act provides procedures for: • labour disputes being referred to the Labour Officer or, if necessary, to the Industrial Court • industrial action and collective agreements.
Labour Unions Act, 2006	The Act regulates the establishment, registration and management of labour unions.
Land Acquisition Act, Cap 226	The Act provides for: • the compulsory acquisition of land for public purposes and for other matters incidental thereto • adequate compensation to project affected persons in the case of compulsory acquisition for a project.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Land Act, Cap 227, 1998 (as amended in 2010)	The Act: • requires that a person who owns or occupies land will manage and use the land in accordance with the Forest Management Act, the Mining Act, the National Environment Act, the Water Act, the Uganda Wildlife Act and any other law. The 2010 amendment aims to enhance the security of occupancy of lawful and bona fide occupants on registered land in accordance with Article 237 of the Constitution (Section 43). • stipulates that the developer of an energy project should seek to enter into mutual agreement with the occupier or owner of the affected land, and implements the valuation principles for compensation.
Local Governments Act, Cap 243	The Act: • establishes a decentralised form of government based on the district as the main unit of administration. Districts are given legislative and planning powers, including planning for the conservation of the environment within their boundaries. • requires District Environment Committees, established under Section 15 of the National Environment Act, to guide the district authorities in matters relating to conservation of the environment • specifies functions and services of the Government and local governments (Second Schedule). These include: • Government responsibility for the national monuments, antiquities, archives and public records as Parliament may determine • district council responsibility for aiding and supporting the establishment and maintenance of social amenities such as art galleries, museums and tourist centres. • Assisting the government to preserve the environment through protection of forests, wetlands, lake shores, streams and prevention of environmental degradation.
Minimum Wages Boards and Wages Councils Act Cap 221, 1957	The Act provides for the establishment of minimum wages advisory boards and wages councils, and for the regulation of the remuneration and conditions of employment for employees.
National Forestry and Tree Planting Act, 2003	The Act provides for: • the conservation, sustainable management and development of trees and forests for the benefit of the people of Uganda • any person intending to undertake any project or activity that is likely to have significant impact on a forest will need to undertake an EIA (Section 38). The Act also defines central forest reserves in two main categories: for production and for protection, although there may be an overlap between actual activities in some forest reserves.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Physical Planning Act, 2010	The Act: • makes it mandatory for any person undertaking a development in a designated planning area to obtain development permission • stipulates that the Minister may, on the recommendation of the National Physical Planning Board, declare an area (such as the Albertine Graben) with unique development potential or problems as a special planning area and require the preparation of a physical development plan (PDP) (Section 24 (1).
Plant Protection and Health Act, 2015	The Act: • provides for prevention and control of pests, weeds and diseases. This includes the duty of land occupiers to take measures necessary for eradication, reduction or prevention of the spread of harmful organisms • regulates the export and import of plants. Permit and a phytosanitary certificate are required for import of plants.
Prevention and Prohibition of Torture Act No. 3, 2012	The Act: • gives effect to the obligations of Uganda as a State Party to the United Nation's Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment • prohibits torture, cruel, inhuman or degrading treatment or punishment in any circumstances • provides for the right to complain and investigation procedures.
Prohibition of the Burning of Grass Act Cap 33, 1974	The Act: • prohibits the unauthorised burning of grass within a forest reserve, national park, wildlife reserve or wildlife sanctuary • requires the proponent to take appropriate measures to prevent burning of grass within the project area as a consequence of project activities.
Public Finance Management Act, 2015	The Act provides for: • government revenues arising from the petroleum industry to be paid into the Petroleum Fund. From this fund, the revenues may be transferred either to the Consolidated Fund to support the national budget or to the Petroleum Revenue Investment Reserve. • royalties arising from the Petroleum Revenue Investment Reserve; the government retains 94% and local governments in the petroleum exploration and production areas share the remainder.
Public Health Act, Cap 281	The main objective of the Public Health Act is to: • safeguard and promote public health • provides a general prohibition of nuisances or conditions liable to be hazardous to health (Section 54).
Public Order Management Act No. 9, 2013	The Act provides for: • the regulation of public meetings • the duties and responsibilities of the police, organisers and participants of public meetings • measures for safeguarding public order.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Registration of Titles Act, Cap 230	The Act stipulates the requirements relevant to the registration and issuance of titles for and transfer of registered land.

Roads Act, Cap 358	The Act provides for:
	• the maintenance of roads by granting the Ministry of Works and Transport, the Uganda National Roads Authority and local governments powers to:
	  ○ declare road reserves
	  ○ prescribe building lines
	  ○ remove interferences to roads
	  ○ extract materials required for construction or maintenance of roads from a road reserve without compensation to any person.
	• No person will, except with the written permission of the road authority, erect any building or plant any tree or permanent crops in a road reserve (Section 3).
	• The road authority power to dig and take away materials required for the construction and maintenance of roads in any part of a road reserve approved by the district commissioner without payment to any person (Section 6).

Survey Act, Cap 232	The Act provides for, and guides, the surveying of land in Uganda, including aspects such as access to lands to be surveyed, and compensation for injury caused during survey activities. The Act: • requires the proponent to undertake land acquisition activities in accordance with the requirements of the Act, including provision of prior notice and compensation for trees, fences or crops cleared or damaged as part of a survey • stipulates provisions for licensing of surveyors and confers upon government surveyors the power to enter onto any land during execution of their duties.
Traditional Rulers Act (Restitution of Assets and Properties) Cap 247, 1993	Under the Act, confirmed by the constitution of Uganda in 1995, kings and chiefdoms are given the right to own their assets and property, including cultural property. In the area of the project, chiefs are recognised as the custodians of cultural sites and traditional belief systems.
Traffic and Road Safety Act, Cap 361	The Act provides for: • the overarching requirements for the use of road vehicles in Uganda, including registration of vehicles, issuance of driver permits, licensing of public service, omnibuses and goods vehicles. • the enabling framework for related traffic and road safety regulations.
Uganda Human Rights Commission Act No. 4, 1997, Cap 24	The Act provides for: • the establishment of the Uganda Human Rights Commission • witness attendance and immunities • application of High Court Rules and appeals.

Table 3.2-1 Ugandan Legislation

Legislation	Summary of Requirements
Water Act, Cap 152	The Act's objectives are to: • promote the rational management and use of water resources of Uganda • promote the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons • allow for orderly development and use of water resources for purposes other than domestic use • control pollution and to promote the safe storage, treatment, discharge and disposal of waste that may pollute water or otherwise harm the environment and human health Section 18 stipulates that the necessary permits will be obtained before any abstraction of water from natural surface waters (lake, river or stream) and groundwater (aquifer, spring). Section 31 prohibits the discharge of waste into any natural waters unless authorised under the Act.
Whistleblowers Protection Act No. 6, 2010	The Act provides for: • the procedures of the disclosure of information that relates to illegal practices • protection against victimisation of persons who make disclosures.
Wildlife Act Cap 200, 2003 *currently under government review*	The Act provides for: • the conservation of wildlife throughout Uganda so that the abundance and diversity of their species are maintained at optimum levels commensurate with other forms of land use to allow for sustainable utilisation of wildlife for the benefit of the people of Uganda • the protection of rare, endangered and endemic species of wild plants and animals • the enhancement of economic and social benefits from wildlife management by establishing wildlife use rights and the promotion of tourism. The ownership of every wild animal and wild plant existing in its wild habitat in Uganda is vested in the government, on behalf of, and for the benefit of, the people of Uganda. Any developer desiring to undertake any project that may have a significant effect on any wildlife species or community needs to undertake an environmental impact assessment in accordance with the National Environment Act.
Workers Compensation Act Cap 225, 2000	The Act: • establishes employer's liability for personal injury which arises out of and in the course of a worker's employment • provides procedures for accident notification, medical examination and treatment, and compensation.

3.2.2 Policies and Plans

Ugandan ministries and authorities issue policies and plans that serve a variety of purposes, such as formulating visions and goals, defining strategies to achieve the goals and considering the development of appropriate administrative, legislative and managerial frameworks to achieve the goals of the plan or policy. Table 3.2-2 summarises some of the policies and plans that are or may be relevant to the project including those relating to planning for the Albertine Graben region.

Table 3.2-2 Policies and Plans

Title	Year	Regulator	Summary
Albertine Physical Development Plan	2015	Ministry of Lands, Housing and Urban Development	Physical development planning framework to accommodate industry, community and regional needs
Energy Policy for Uganda	2002	Ministry of Energy and Mineral Development	The goal of the Energy Policy for Uganda is to ensure that the country's energy needs are met in an environmentally sustainable manner. Provides for the management of the Ugandan oil sector's upstream and downstream activities
Land Acquisition, Resettlement and Rehabilitation Policy (draft)	-	Ministry of Lands, Housing and Urban Development	The policy is under development
Murchison Falls Protected Area – General Management Plan 2013-2023	2013	Uganda Wildlife Authority	The Murchison Falls Protected Area comprises Murchison Falls National Park, Karuma Wildlife Reserve and Bugungu Wildlife Reserve. A general management plan is in place to guide protected area management.
Museums and Monuments Policy	2015	Ministry of Tourism, Wildlife and Antiquities	The main aim of the policy is to "create a framework for preservation and sustainable development of Uganda's Museums and Monuments for the benefit of the people of Uganda and posterity". The policy further provides guidance on collection, research and museum services.
National Environmental Action Plan	1994	NEMA	Provides a framework for addressing gaps in environment management as well as a strategy for integrating environmental issues into national socio-economic development
National Environment Management Policy *currently under government review*	1994	NEMA	Emphasises the use of EIA and environmental auditing and recognises the need for sectoral policies to address concerns in specific environmental sectors
National Fisheries Policy	2004	Ministry of Agriculture, Animal Industry and Fisheries	Provides strategies for sustainable management of fisheries though decentralisation and community involvement

Table 3.2-2 Policies and Plans

Title	Year	Regulator	Summary
National Forest Plan 2011/12–2021/22	2013	Ministry of Water and Environment	Recognises that revenue from the Albertine Graben Rift developments provides an opportunity to invest in sustainable forest management The National Forest Plan promotes regional collaboration in biodiversity conservation in the Albertine Graben.
National Forestry Policy	2001	Ministry of Water and Environment	Aims to promote an integrated forest sector that achieves sustainable growth in economic, social and environmental benefits from forests and trees for all Ugandans
The National Gender Policy	2007	Ministry of Gender, Labour and Social Development	Places responsibilities on the private sector, such as incorporation of gender equality principles in corporate policies, broadening corporate social responsibility and interventions that promote gender equality
National Oil and Gas Policy	2008	Ministry of Energy and Mineral Development	Imposes a responsibility on oil companies to protect the environment in which they work
National Policy for Disaster Preparedness and Management	2011	Department of Disaster Preparedness and Management, Office of the Prime Minister	Private sector organisations have a responsibility to ensure their operations do not pose a risk to their workers, the general public, or the environment.
National Policy for the Conservation and Management of Wetland Resources	1995	NEMA	The application of environmental impact assessment procedures to all activities carried out in wetlands to ensure that wetland development is managed
National Transport Master Plan	2009	Ministry of Works and Transport	Calls for close cooperation between Ministry of Works and Transport and the Ministry of Energy and Mineral Development (the primary body responsible for oil and gas pipeline infrastructure), as pipelines will be subject to regulation by Ministry of Works and Transport
National Water Policy	2013	Ministry of Water and Environment	The aim is to secure and provide water of adequate quantity and quality for all social and economic needs, with the full participation of all stakeholders.
Strategic Plan for the North Albertine Rift of Uganda, 2011–2020	2012	Ministry of Water and Environment	Conservation strategy for the area
Uganda National Culture Policy	2006	Ministry of Gender, Labour and Social Development	Promotes culture and protection of Uganda's tangible and intangible cultural heritage, as well as environment as an important element of cultural practices

Table 3.2-2 Policies and Plans

Title	Year	Regulator	Summary
Uganda National Land Policy	2013	Ministry of Lands, Housing and Urban Development	Paragraph 3.8 of the policy outlines government strategies for managing land resources with respect to minerals and petroleum development.
Uganda Second National Development Plan 2015/16–2019/20	2015	Government of Uganda	Second National Development Plan (NDP II) contains sectoral objectives and interventions for managing the environment and natural resources, industrial and infrastructure development, and human capital development
Uganda Wildlife Policy	2014	Ministry of Tourism, Wildlife and Antiquities Uganda Wildlife Authority	Seeks to promote sustainable management of wildlife inside and outside of the protected areas, effectively mitigate human wildlife conflicts and ensure net positive impacts of exploration and development of extractive industries in wildlife conservation areas

3.2.3 Regulations and Guidelines

Table 3.2-3 summarises Ugandan national regulations and guidelines that are or may be relevant to the project.

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
Environmental Impact Assessment Regulations, 1998 *currently under government review*	The EIA Regulations, 1998 specify the general requirements for good EIA practice in Uganda: • The proponent is required to undertake an ESIA in accordance with the regulations, including preparation and submission of Terms of Reference, and provision of all contents for an environmental impact statement outlined under Regulation 14. • Regulation 12 (1) requires the developer to take all measures necessary to seek the views of the people in the communities that may be affected by the project. Regulations 19, 20, 21, 22 and 23 outline further requirements for public participation. For instance, under Regulation 21 (2), a public hearing is required where the project may have transboundary impacts. • Regulation 39 provides requirements for disclosure, review and consultation for projects with likely transboundary impacts.
National Environment (Air Quality) Regulations (Draft)	The Regulations: • prescribe emission limits of various substances, standards for ambient air and emission standards for point sources and motor vehicles.

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
National Environment (Audit) Regulations, 2006 *currently under government review*	• Environmental audits to be conducted only by certified and registered auditors. • Every owner or operator of a facility whose activities are likely to have a significant impact on the environment is required to establish an environmental management system and may conduct voluntary environmental audits.
National Environment (Conduct and Certification of Environmental Practitioners) Regulations, 2003	The Regulations: • establish the code of conduct for certification, registration of environmental practitioners and for the practice of environmental impact assessment in Uganda • require a proponent to engage a competent team of registered environmental practitioners to undertake the EIA, and to adhere to the requirements of the regulations.
National Forestry and Tree Planting Regulations, 2016	The Regulations: • sets prohibited acts on protected trees and reserved species • prohibit the introduction of (invasive) alien species • sets requirements for licence application for the right to operate in a forest
National Environment (Industrial and Consumer Chemicals Control) Regulations, 2014 (Draft)	The Regulations: • provide for the management of chemicals, including risk assessment, remediation and emergency response. A licence is required to store and regulated chemicals.
National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2001	The Regulations: • operationalise Uganda's commitment to the Montreal Protocol through restrictions on the trade of controlled substances and licensing of persons intending to import or export controlled substances • state resourcing of goods and materials should not be from a country that is not a signatory of the Montreal Protocol state that imports of controlled substances should be licensed by the relevant authority and free of prohibited materials.
National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001 *currently under government review*	The Regulations: • establish the minimum standards required to maintain, restore and enhance the long-term productivity of the soil; establish standards for management of soil quality associated with agriculture; and establish criteria and procedures for determining soil quality.
National Environment (Mountainous and Hilly Areas Management) Regulations, 2000	The Regulations: • provide for the sustainable management of mountainous and hilly areas, and prescribe rules for soil conservation • prohibit the introduction of (invasive) alien species.

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
National Environment (Noise Standards and Control) Regulations, 2003 *currently under government review: the National Environment (Noise and Vibrations) (Standards and Control) Regulations, 2013*	The Regulations: • establish permissible noise levels for a factory, workshop, construction site and mines and quarries • impose a duty on the owner of machinery or the owner or occupier of a facility or premises to use the best practicable means to ensure that the emission of noise from that machinery, facility or premise does not exceed permissible noise levels and require installation of noise monitoring equipment • require a licence for generating noise in excess of permissible noise levels.
National Environment (Oil Spill Prevention, Control and Management) Regulations, 2014 (Draft)	The Regulations: • provide for prevention, control and monitoring of oil spill in waters and on land under Ugandan jurisdiction • establish the basic principles to be observed in handling oil and other harmful or dangerous substances, emergency response and cleanup.
National Environment (Petroleum Waste Management) Regulations, 2014 (Draft)	The Regulations: • establish the duty of care in waste handling and contain provisions for risk assessment and management practices • state that transport and disposal of oil and gas waste is subject to permit.
National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999 *currently under government review: The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations (Draft)*	The Regulations: • provide the standards for effluent or waste water before it is discharged into water or onto land • provide for the general obligation to mitigate pollution and require every industry or establishment to install, at its premises, antipollution equipment for the treatment of effluent or chemical discharges • state that antipollution equipment has to be based on the best practicable means for environmentally sound practice • require records to be kept of the amount of waste generated by the activity and of the parameters of the discharges.
National Environment (Waste Management) Regulations, 1999 *currently under government review*	The Regulations: • apply to all categories of hazardous and non-hazardous waste, storage and disposal of hazardous waste and their movement into and out of Uganda and to all waste disposal facilities, landfills, sanitary fills and incinerators • require a licence to transport, store and deposit waste • ensure that operations are undertaken in an environmentally sound way

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
National Environment (Wetlands, Riverbanks and Lakeshores Management) Regulations, 2000	The Regulations: • ensure the central or local governments shall hold in trust and protect wetlands, riverbanks and lakeshores for the common good of the citizens of Uganda. • provide a list of regulated activities whose implementation in wetlands is subject to issuance of a permit granted by NEMA in consultation with the relevant lead agencies. This applies to a range of recreational and commercial activities, including construction of transport and communication facilities such as roads, railways, telephone lines and any other activity that is of a commercial nature. • ensure every landowner, occupier or user who engages in activities adjacent or contiguous with a wetland, riverbank and lakeshore has a duty to prevent degradation or destruction and maintain the ecological and biodiversity conservation functions of the wetland.
Petroleum (Refining, Conversion, Transmission and Midstream Storage) (National Content) Regulations, 2016	The Regulations: • promote the empowerment of Ugandan citizens and entities during the execution of midstream operations • local content provisions seek to prioritise Ugandan suppliers and service providers in the procurement of goods and services, and to promote the transfer of technology and training of Ugandan nationals. • state that MEMD is required to consider national content when evaluating any licence application under the Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act, 2013.
Petroleum (Refining, Conversion, Transmission and Midstream Storage) Regulations, 2016	• Part III includes requirements associated with pipelines, including pipeline construction licencing, routing, design and safety considerations, construction, operation and decommissioning. A permit is required to begin operation of a pipeline. • Part V covers requirements for storage tanks. A licence to construct and operate midstream storage tank is required.
Petroleum (Refining, Conversion, Transmission and Midstream Storage) (Health, Safety and Environment) Regulations, 2016	• The regulations contain the requirements for health, safety and environment management, risk management, handling of hazardous materials, emergency preparedness and response. • Additional safety requirements for pipelines are included in Sections 134–140. • Procedures for spillage at facility during midstream operation are specified in Section 159. • Effluent and drainage disposal requirements are specified in Section 160.

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
Traffic and Road Safety (Motor Vehicle Inspection) Regulations, 2016	The Regulations: • provide for periodic inspection of road vehicles to ascertain their roadworthiness. • All vehicles including goods vehicles shall be subject to periodic inspection at approved facilities.
Traffic and Road Safety (Prescribed Alcohol Limit) Regulations, 2004	The Regulations: • prescribe breath alcohol level beyond which a person is not allowed to drive a motor vehicle.
Traffic and Road Safety (Restriction of Use of Mobile Telephones) Regulations, 2004	The Regulations: • restrict the use of mobile phones while driving.
Traffic and Road Safety (Speed Limits) Regulations, 2004	The Regulations: • prescribe applicable speed limits for various road conditions, locations and vehicle types.
Traffic and Road Safety (Wearing of Safety Belts) Regulations, 2004	• All seats in a vehicle to be fitted with safety belts • The driver and all passengers in a vehicle must wear safety belts at all times when the vehicle is moving.
Traffic and Road Safety (Weighbridges) Regulations, 2010	The Regulations: • prescribe the maximum axle load weights for vehicles, trailers and engineering plants of various axle groups.
Water (Waste Discharge) Regulations, 1998	The Regulations: • prescribe limits for the discharge of waste into water resources, specifying among others restricted activities for which waste discharge permits must be acquired • stipulate that a proponent shall acquire a permit where the discharge of effluent or waste into water or on land is deemed necessary (Regulation 4 (1)).
Water Resources Regulations, 1998	The Regulations: • license abstraction from lakes, rivers and groundwater • stipulate that obtaining a licence requires consideration of other uses, including those downstream
National Guidelines	
Guidelines for Environmental Impact Assessment in Uganda (NEMA 1997)	• General guidelines on the ESIA process in Uganda. Includes recommendations to project developers, EIA practitioners, lead agencies and NEMA
Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda (NEMA 2014)	The Guidelines: • provide detailed guidelines for the EIA process as applicable to the energy sector in Uganda • contain specific guidelines on HIV and gender-related issues, climate change, disputes and grievances, public hearing and transboundary aspects

Table 3.2-3 Regulations and Guidelines

Regulations	Summary of Requirements
Environmental Impact Assessment Guidelines for Road Projects (Ministry of Works and Transport (formerly Ministry of Works, Housing and Communications), 2004)	• Guidelines on EIA process for road projects, such as road upgrades and construction of new roads. Includes guidelines for socio-economic and cultural impact assessment, compensation and resettlement, and public consultation
Environmental Impact Assessment Guidelines for Water Resources Related Projects in Uganda (MWE 2011)	• Guidelines cover groundwater projects (such as borehole drilling and groundwater extraction) and surface water projects (such as industrial water supply and discharge projects)
National Physical Planning Standards and Guidelines (Ministry of Lands, Housing and Urban Development 2011)	The Guidelines: • provide a government manual of criteria for determining the scale, location and site requirements of various land uses and facilities • contain standards for industrial areas, roads and vehicle parking.
Operational Waste Management Guidelines for Oil and Gas Operations (NEMA 2012)	The Guidelines: • define guiding principles for waste management • describe international practices for oil and gas waste management and the National Environment (Waste Management) Regulations, 1999.
Uganda Wildlife Authority Operational Guidelines for Oil and Gas Exploration and Production in Wildlife Protected Areas (2014)	The Guidelines: • guide the operations of oil companies within wildlife protected areas • provide specific requirements for construction and operation of access roads and pipelines, materials extraction sites and aboveground installations • contain guidance on addressing potential impacts on tourism and ecosystem health.

3.2.4 Administrative Framework

Table 3.2-4 lists the administrative bodies that are or may be relevant to the project.

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
National Level	
Civil Aviation Authority	• Promotes the safe, regular, secure and efficient use and development of civil aviation inside and outside Uganda • Licences operators and aviation crew, and certifies operators and aircraft • Provides air navigation services • Establishes, maintains, operates and owns aerodromes

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Climate Change Department (CCD) (part of the Ministry of Water and Environment)	The main objective for establishing the CCD is to strengthen Uganda's implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. • Provides technical support to the Ministry of Water and Environment with regards to climate change issues • Coordinates national climate change mitigation and adaptation actions in different sectors, including energy
Department of Occupational Safety and Health, Ministry of Gender, Labour and Social Development	• Responsible for implementing the Occupational Safety and Health Act (2006), and carrying out statutory inspections to ensure proper management of health and safety at workplaces, including the oil and gas industry
Directorate of Fisheries Resources (part of Ministry of Agriculture, Animal Industry and Fisheries)	• Promotes, supports and guides the sector • Responsible for setting and enforcing the standards and regulations for practices pertaining to fisheries
Directorate of Water Development (part of the Ministry of Water and Environment)	• Provides support to local governments and other service providers with respect to water resource issues
Directorate of Water Resource Management (part of the Ministry of Water and Environment)	• Develops and maintains national water laws, policies and regulations • Manages, monitors and regulates water resources through issuing water use, abstraction and wastewater discharge permits • Integrates water resources management activities • Coordinated Uganda's participation in joint management of transboundary waters resources and peaceful cooperation with Nile Basin countries
Ministry of Agriculture, Animal Industry and Fisheries	• Formulates, reviews and implements national policies, plans, strategies, regulations and standards • Enforces laws, regulations and standards along the value chain of crops, livestock and fisheries • Monitors, inspects and evaluates activities in the agricultural sector including local governments • Regulates, among other aspects, the use of agricultural chemicals and planting materials

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Ministry of Energy and Mineral Development (MEMD)	• Establishes, promotes the development, strategically manages and safeguards the rational and sustainable exploitation and utilisation of energy and mineral resources for social and economic development • Policy guidance for developing and exploiting energy and mineral resources • Creates an enabling environment to attract investment for the development, provision and utilisation of energy and mineral resources • Acquires, processes and interprets technical data to establish the energy and mineral resource potential of the country • Inspects, regulates, monitors and evaluates private companies in energy and mineral sectors so that the resources are developed, exploited and used on a rational and sustainable basis.
Ministry of Lands, Housing and Urban Development	Formulates: • policies in relation to land issues • national standards and coordination of all matters concerning land, housing and urban development. Of particular relevance to the project are the following units within the Ministry: • Directorate of Land Management, which is responsible for issues concerning overall land management including management of the national land register, technical support relating to land registration and acquisition processes to local governments, and land valuation • Directorate of Physical Planning and Urban Development, which is responsible for regional planning and formulation of land use related policies, plans and regulations.
Ministry of Tourism, Wildlife and Antiquities	• Formulates and implements policies, strategies, plans and programmes that promote tourism, wildlife and cultural heritage conservation • Conservation and development of wildlife resources, and provision of advice to government • Promotes and protects the cultural and natural heritage • Provides professional knowledge and information regarding the archaeology and palaeontology of Uganda • Oversees the Uganda Wildlife Authority, among other institutions

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Ministry of Water and Environment (MWE)	• Responsible for setting national policies and standards, managing and regulating water resources and determining priorities for water development and management • MWE has three directorates: o Directorate of Water Resources Management (DWRM) o Directorate of Water Development o Directorate of Environmental Affairs. • Reporting to MWE are the: o National Environment Management Authority (NEMA), o National Forestry Authority (NFA) o National Water and Sewerage Corporation.
Ministry of Works and Transport	• Plans, develops and maintains an economic, efficient and effective transport infrastructure and services, which includes roads and pipelines • Develops national policies, laws and regulations in the area of public transport infrastructure and services • Sets standards for the construction industry, transport infrastructure and services • Enforces compliance with the existing policies, laws and regulations • Develops and manages the national road network and provides guidance on matters concerning the national road network to the Uganda National Roads Authority.
National Environment Management Authority (NEMA)	Established in May 1995 under the National Environment Act Cap 153 as the principal agency in Uganda charged with the responsibility of coordinating, monitoring, regulating and supervising environmental management. NEMA's functions: • coordinates the implementation of government policies and decisions of the Policy Committee on Environment • ensures the integration of environmental concerns in overall national planning through coordination with the relevant ministries, departments and government agencies • liaises with the private sector, intergovernmental organisations, nongovernmental and government agencies of other states on issues relating to the environment • proposes environmental policies and strategies to the Policy Committee • initiates legislative proposals, standards and guidelines on the environment in accordance with the law • reviews and approves EIAs and EISs.

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
National Forestry Authority (NFA)	• Responsible for managing national forest reserves under the National Forestry and Tree Planting Act, 2003 that provides for the conservation, sustainable management and development of forests for the benefit of the people of Uganda • NFA coordinates with NEMA and other agencies on managing Uganda's forest resources, and controls industrial developments in central forest reserves in conjunction with other relevant authorities.
National Physical Planning Board	• Advises on the declaration of special planning areas as prescribed by the Physical Planning Act, 2010 • Prepares physical development plans • Formulates draft planning policies, standards, guidelines and manuals. As a result of the project's footprint within including a special planning area (the Albertine Graben), the National Physical Planning Board will be a key stakeholder.
Petroleum Authority of Uganda (PAU)	• Created in accordance with Section 9 of the Petroleum (Exploration, Development and Production) Act, 2013 and also carries out functions under the Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act, 2013 • Regulates and monitors the oil and gas sector in Uganda • Ensures that petroleum operations in Uganda are carried out in accordance with the relevant laws
Petroleum Exploration, Development and Production Department (PEPD, Directorate of Petroleum, part of Ministry of Energy and Mineral Development)	• Promotes and regulates petroleum exploration in Uganda • Implements the National Oil and Gas Policy for Uganda (2008) with the PEPD being responsible for initiating policy and legislation on petroleum exploration and development, regulating licensees for undertaking petroleum exploration and production in the country, and building national capacity in the field of petroleum exploration and development
The Uganda National Oil Company (UNOC)	• A limited liability petroleum company in Uganda and owned by the Ugandan government. The role of the National Oil Company is to participate in the production phase on behalf of the state. • The UNOC has a wholly owned subsidiary; The Uganda National Pipeline Company that will represent the economic interests of the state in the Pipeline Company.
Uganda Human Rights Commission	• Established under the Constitution of the Republic of Uganda 1995 (Article 51) • Responsible for protecting and promoting fundamental human rights and freedoms in Uganda and implementing international human rights conventions

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Uganda Land Commission	• Manages any land in Uganda vested in or acquired by the Government of Uganda in accordance with the Constitution • Maintains an updated inventory and database for all government land and property • Protects government lands from unauthorised use • Executes deeds like leases and tenancy agreements for government lands • Handles investigations and litigations arising from disputes over government land • Collaborates with the Ministry of Lands, other stakeholders and responsible organs on the review of land laws • Resettles persons displaced because of government actions, natural disasters or any other cause through outright compensations or provision of alternative land
Uganda National Bureau of Standards	• Established by the Uganda National Bureau of Standards Act, Cap 327 • Formulates, promotes and enforces standards in the interest of public health, safety and the environment. • Publishes the Uganda Standards Catalogue, which includes compulsory and voluntary standards for industries, including the oil and gas sector
Uganda National Roads Authority	• Develops and maintains the national roads network, advises Government on general roads policy and contributes to addressing transport concerns, among others • Collaborates with the private sector on issues relating to the development and maintenance of roads • The Environment and Social Safeguards department is responsible for identifying and evaluating environmental and social risks and impacts of road and bridge projects as well as ensuring grievances from affected persons are responded to and appropriately managed.
Uganda Wildlife Authority (UWA)	• UWA was established under the Uganda Wildlife Act (2000) • In charge of managing 10 national parks, 12 wildlife reserves, 13 wildlife sanctuaries and 5 community wildlife areas • UWA is mandated to perform all the functions required of a lead agency for purposes of an EIA for any project that may have a significant effect on any wildlife species or community.
Wetlands Management Department (part of the Ministry of Water and Environment)	• Promotes conservation and sustainable use of wetlands and their resources and to ensure sustainable use of wetlands for ecological and tourism purposes • Participates in the evaluation of EIAs for projects in wetland areas

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Local Level	
District Community Development Officer	• Plays a key role in stakeholder engagement and community projects
District Environment Committee	• Coordinates the activities of the district council and the local environment committees relating to the management of the environment and natural resources • Ensures that environmental concerns are integrated in all plans and projects approved by the district council • Assists in developing and formulating byelaws relating to managing the environment • Coordinates with NEMA on all issues relating to environment management
District Environment Officer	• Advises the district environment committee on all matters relating to the environment • Assists local environment committees in the performance of their functions • Gathers information on the environment and the utilisation of natural resources in the district • Serves as the secretary to the district environment committee
District Health Management Team	• Responsible for implementing health policies and programmes and planning and overseeing health service delivery
District Land Board	• Holds and allocates land in the district that is not owned by any person or authority • Facilitates the registration and transfer of interests in land • Compiles and maintains rates of compensation payable (e.g., crops, non-permanent buildings) • Acquires rights or interests in land
District Land Office	• Provides technical services to the district administration and the District Land Board
District Technical Planning Committee	• Implements coordination and development planning functions of the local government • Integrates all district sector development priorities and those of lower level local governments for presentation to the district council
District Wildlife Committee	• Advises the district councils, in liaison with UWA, on managing and utilising wildlife within the local jurisdiction

Table 3.2-4 Administrative Bodies

Institution	Roles and Responsibilities
Local Environment Committee	• Monitors all activities within its local jurisdiction to ensure that such activities do not have any significant impact on the environment • Reports any events or activities that have or are likely to have significant impacts on the environment to the district environment officer or the appropriate authority • Identifies riverbanks, lakeshores, wetlands and hilly or mountainous areas that are at risk from environmental degradation or are of local, national and international importance, and takes necessary measures to reduce the risk or recommend to the authority the need for the protection of those areas • Prepares local land use plans

3.2.5 Permitting Requirements

3.2.5.1 ESIA Preparation and Approval Procedure

The main environmental approval required for the project is the approval of a project environmental impact assessment. The Guidelines for Environmental Impact Assessment in Uganda (NEMA 1997) and the Environmental and Social Impact Assessment Guidelines for the Energy Sector (NEMA 2014) describe the ESIA key steps as follows:

1. Project brief and screening: NEMA and other relevant lead agencies[5] determine the extent to which a project is likely to affect the environment and whether further assessment is necessary. Also if a project type, such as pipelines, is listed in the Environment Act, Third Schedule, Projects to be considered for environmental impact assessment, an EIA is automatically required without the need for submission of a project brief.
2. Scoping and preparation of terms of reference (ToR) for the EIS: the scope of work to be undertaken to identify and assess the likely environmental effects of a proposed project are determined. NEMA reviews the ToR in consultation with an appropriate lead agency before the EIS is conducted to ensure that key environmental concerns associated with the proposed project are included.
3. EIS: following the scope defined in the ToR, the project proponent describes baseline environmental and social conditions, assesses the significance of likely impacts associated with the project and develops mitigation measures to address the identified impacts. The EIS is submitted to NEMA for review.
4. Review of the EIS and decision making: after receiving the EIS, NEMA reviews it and also sends copies to the lead agency and other stakeholders for review and feedback, before making the decision whether to approve the project.

[5] According to the National Environment Act 1995 Cap 153, Part I Section 1(gg), 'lead agency' means any ministry, department, parastatal agency, local government system or public officer in which or in whom any law vests functions of control or management of any segment of the environment."

Figure 3.2-1 shows the key stages of the EIA process.

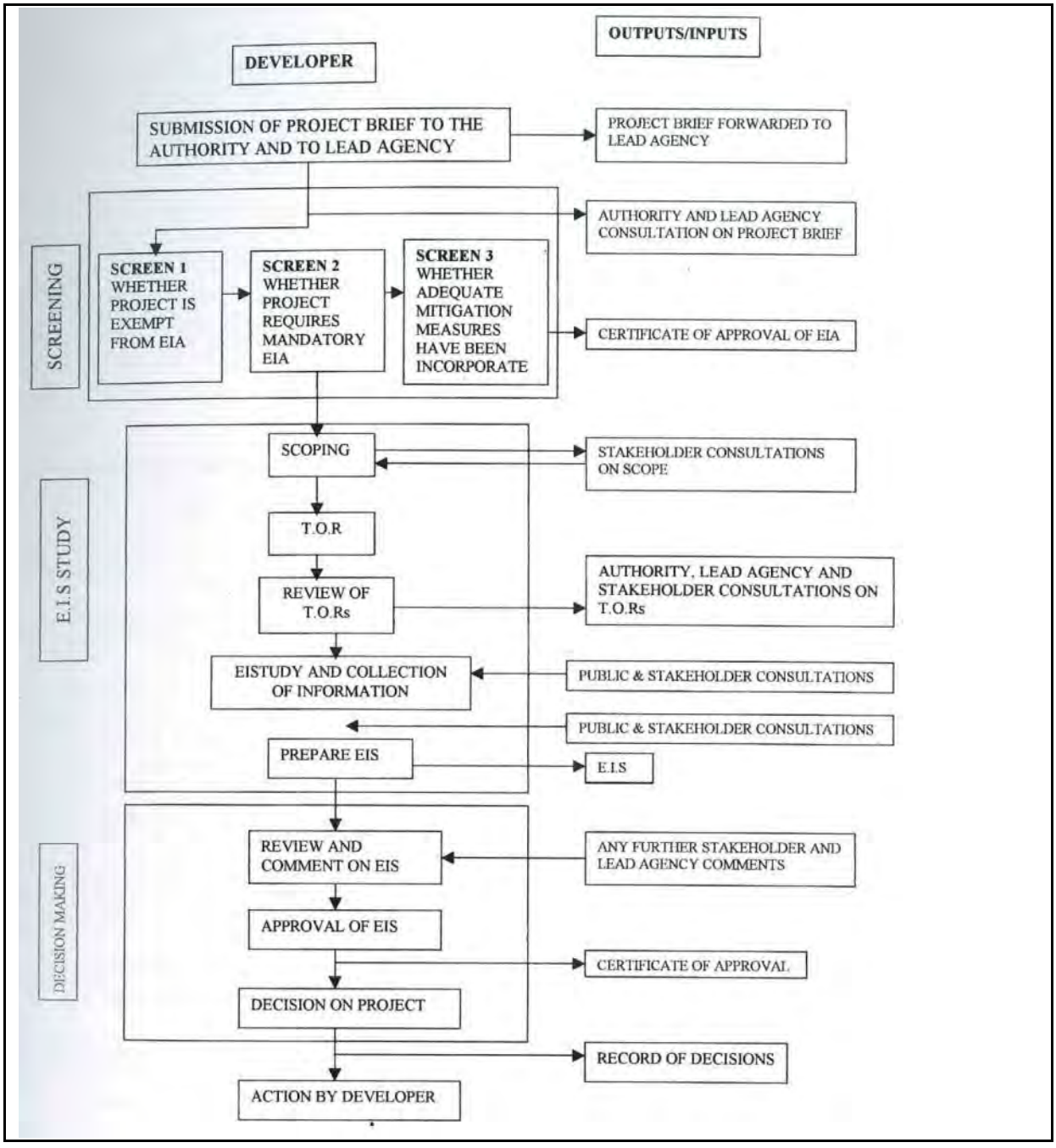

Figure 3.2-1 EIA Process in Uganda

SOURCE: NEMA (2014)

3.2.5.2 Permits, Licences and Authorisations

The national legislation of Uganda establishes several approvals, permits and licences which must be acquired before a project or specific activities begin. Table 3.2-5 provides an overview of the permits, licences and approvals that are or may be required by the project.

Table 3.2-5 Permits, Licences and Authorisations

Permit, Licence or Approval	Issuing Authority	Legislation or Regulations	Requirement
Authorisation to use radioactive sources	Atomic Energy Council, Ministry of Energy and Mineral Development (MEMD)	Atomic Energy Act, 2008	Section 32 (1): Subject to section 33, no person shall acquire, own, possess, operate, import, export, hire, loan, receive, use, install, commission, decommission, transport, store, sell, distribute, dispose of, transfer, modify, upgrade, process, manufacture or undertake any practice related to the application of atomic energy and regulated by this Act unless permitted by an authorisation issued under this Act.
Borehole construction	Directorate of Water Resource Management (DWRM)	Water Act, Cap 152	Section 18 (1): No person shall construct or operate any works unless authorised to do so under this Part of the Act. Section 18 (2): A person wishing to construct any works or to take and use water may apply to the director in the prescribed form for a permit to do so.
		Water Resources Regulations, 1998	Regulation 16 (2): A person who wishes to engage a driller under sub-regulation (1) to construct a borehole on his or her land for the purpose of, (a) using water; (b) recharging an aquifer; or (c) fitting a motorised pump to a borehole may apply to the Director for a construction permit in Form F1 of the Sixth Schedule.
Construction and operation of midstream storage tank	MEMD	Petroleum (Refining, Conversion, Transmission and Midstream Storage) Regulations, 2016	Regulation 109 (1): A person shall not store petroleum commodities or petroleum products in bulk without a licence issued by the Minister under the Act and these Regulations.
Development permission	District Technical Planning Committee	Planning Act, 2010	Section 33 (1): A person shall not carry out a development within a planning area without obtaining development permission from a physical planning committee.
Groundwater abstraction Surface water abstraction	DWRM	Water Act, Cap 152	Section 18 (1): No person shall construct or operate any works unless authorised to do so under this Part of the Act. Section 18 (2): A person wishing to construct any works or to take and use water may apply to the director in the prescribed form for a permit to do so.

Table 3.2-5 Permits, Licences and Authorisations

Permit, Licence or Approval	Issuing Authority	Legislation or Regulations	Requirement
		Water Resources Regulations, 1998	Regulation 3 (1): A person who (a) occupies or intends to occupy any land; (b) wishes to construct, own, occupy or control any works on or adjacent to the land referred to in Regulation 10; may apply to the Director for a water permit.
			Regulation 3 (2): An application referred to under sub-regulation (1) shall, (a) be in the form specified in the First Schedule to these regulations except that, i) Form A shall be used for surface water permits; and ii) Form B shall be used for groundwater permits
Lease agreement	District Land Board	Registration of Titles Act, Cap 230	Section 101: The proprietor of any freehold under the operation of this Act may, subject to any law or agreement for the time being in force, lease that land for any term exceeding three years by signing a lease of it in the form in the Eighth Schedule to this Act.
		Land Act, Cap 227	Section 73: Where it is necessary to execute public works on any land, an authorised undertaker shall enter into mutual agreement with the occupier or owner of the land in accordance with this Act; and where no agreement is reached, the Minister may, compulsorily acquire land in accordance with section 42.
		Land Acquisition Act, Cap 226	Section 19: Nothing in this Act shall prevent the Government from entering into an agreement with a person having an interest in land by which— a) that person's interest in land is acquired by the Government; or that person's claim to compensation for land under this Act is settled by the grant of other land or in any other way.

Table 3.2-5 Permits, Licences and Authorisations

Permit, Licence or Approval	Issuing Authority	Legislation or Regulations	Requirement
Licence for transportation, storage and treatment of hazardous or nonhazardous waste	NEMA	National Environment (Waste Management) Regulations, 1999	Regulation 6: (1) A person intending to transport waste shall apply to the Authority for a licence in Form I set out in the First Schedule. (2): A person intending to store waste on his or her premises shall apply to the Authority for a licence in Form III set out in the First Schedule. Regulation 13 (1): A person intending to operate a waste treatment plant or disposal site shall apply to the Authority for a licence in Form V set out in the First Schedule.
Licence to erect or carry on a magazine	Ministry of Internal Affairs	Explosives Act, Cap 298	Section 22 (1): Any person desiring to erect or carry on a magazine for the storage of explosives shall make application for a licence to erect or carry on a magazine.
Licence to operate in a forest	National Forestry Authority	The National Forestry and Tree Planting Regulations, 2016	Regulation 89 (1) (k): Subject to sections 14 and 41 of the Act, a person may apply to the responsible body for a licence for entry for a purpose specified in the application.
Noise emissions in excess of permissible noise levels	NEMA	National Environment (Noise Standards And Control) Regulations, 2003	Regulation 12 (1): An owner or occupier of premises whose works or activities are likely to emit noise in excess of the permissible noise levels shall apply to the Executive Director in the form prescribed in Part I of the Second Schedule, for a Licence to Emit Noise in Excess of the Permissible Levels.
Pipeline construction	MEMD	Petroleum (Refining, Conversion, Transmission and Midstream Storage) Regulations, 2016	Regulation 59 (1): A person shall not construct a pipeline without a licence issued by the Minister in accordance with the Act and these Regulations.
Pipeline operation (licence)	MEMD	Petroleum (Refining, Conversion, Transmission and Midstream Storage) Regulations, 2016	Regulation 70 (1): Following the completion of construction of a pipeline or substantial modification of a pipeline to the satisfaction of the Authority, the licensee shall apply to the Minister in writing for a licence to operate the pipeline.

Table 3.2-5 Permits, Licences and Authorisations

Permit, Licence or Approval	Issuing Authority	Legislation or Regulations	Requirement
Pipeline operation (permit)	Petroleum Authority of Uganda	Petroleum (Refining, Conversion, Transmission and Midstream Storage) Regulations, 2016	Regulation 71 (1): Following the completion of construction of a pipeline or substantial modification of a pipeline, the licensee shall notify the Authority in writing of the completion of construction or substantial modification and shall append to such notification the documentation set out in subregulation.
Registration of a workplace	Department of Occupational Safety and Health Ministry of Gender, Labour and Social Development	Occupational Safety and Health Act, 2006	Section 40 (2): a person shall not less than one month before he or she begins to occupy any premises as a workplace, serve on the Commissioner, a notice with the particulars prescribed in Schedule 3.
Regulated activity in a wetland, riverbank or lakeshore	NEMA	National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000	Regulation 12 (1): Subject to the provisions of Regulations, a person shall not carry out any activity in a wetland without a permit issued by the Executive Director. Regulation 12 (2): Any person intending to carry out an activity listed in the Second schedule to these Regulations shall apply to the Executive Director for a permit in Form A of the First Schedule. Regulation 23 (1): A person who intends to carry out any of the following activities shall make an application to the executive Director in Form A set out in the First Schedule to these Regulations (a) use, erect, reconstruct, place, alter, extend, remove or demolish any structure or part of any structure in, under, or over the river banks or lake shore; (b) excavate, drill, tunnel or otherwise disturb the river bank or lake shore; (c) introduce or plant any of a plant whether alien or indigenous on a river bank or lake shore; (d) introduce any animal or micro-organism, whether alien or indigenous in any river bank or lake shore; or (e) deposit any substance on a riverbank or lakeshore if that substance would or is likely to have adverse effects on the environment.

Table 3.2-5 Permits, Licences and Authorisations

Permit, Licence or Approval	Issuing Authority	Legislation or Regulations	Requirement
Wastewater discharge	DWRM	Water (Waste Discharge) Regulations, 1998	Regulation 4 (1): No person shall discharge effluent or waste on land or into the aquatic environment contrary to the standards established under regulation 3 unless he or she has a permit in the format specified in the First Schedule issued by the Director.

3.3 International Conventions and Agreements

Uganda is signatory to several international agreements listed in Table 3.3-1 that are or may be relevant to the project. International conventions and agreements are implemented in Uganda under the authority of specific Acts, policies, regulations and government departments or agencies.

Table 3.3-1 International Conventions and Agreements

Convention	Date Signed or Ratified	Implemented By
African Charter on Human and Peoples' Rights	Ratified in May 1986	Uganda Constitution, 1995
African Charter on the Rights and Welfare of the Child	Ratified in August 1994	Uganda Constitution, 1995
African Convention on the Conservation of Nature and Natural Resources (revised), 2003	Signed in December 2003	EIA Regulations, 1998
Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), June 1995	Ratified in December 2000	The latest report for Uganda was issued in June 2015.
Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, January 1991	Ratified in October 1998	National Environment (Waste Management) Regulations, 1999
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, March 1989	Signed in March 1999	National Environment (Waste Management) Regulations, 1999
Cartagena Protocol on Biosafety, 2000	Ratified in September 2003	Ministry of Water and Environment
Convention against Torture and Other Cruel Inhuman or Degrading Treatment or Punishment	Signed in October 1986	Prevention and Prohibition of Torture Act No. 3, 2012
Convention for the Safeguarding of the Intangible Cultural Heritage, October 2003	Ratified in May 2009	Ministry of Tourism, Wildlife and Heritage
Convention on Biological Diversity, (Rio Convention), June 1992	Ratified in September 1993	Constitution of the Republic of Uganda National Environment Act, Cap 153 Uganda Wildlife Act, Cap 200 Water Act, Cap 152 National Environment Action Plan
Convention on Protection of World Cultural and Natural Heritage, November 1972	Acceded in 1987	Historical Monuments Act, Cap 46
Convention on the Conservation of Migratory Species (Bonn Convention), June 1979	Ratified in August 2000	Uganda Wildlife Act, Cap 200, 2000

Table 3.3-1 International Conventions and Agreements

Convention	Date Signed or Ratified	Implemented By
Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)	Ratified in July 1985	UHRC
Convention on the Protection and Promotion of the Diversity of Cultural Expressions, October 2005	Ratified in April 2015	Ministry of Tourism, Wildlife and Heritage
Convention on the Rights of Persons with Disabilities	Ratified in September 2008	UHRC
Convention on the Rights of the Child	Ratified August 1990	UHRC
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar), 1971, amended by the 1982 Protocol and the 1987 Amendment to the Convention	Ratified in March 1998	National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000
Convention Relating to the Status of Refugees (1951) and the Protocol Relating to the Status of Refugees (1967)	Ratified in September 1976	Refugees Act, 2006
East African Community Protocol for Sustainable Development of Lake Victoria Basin	Signed in November 2003	Ministry of Water and Environment
East African Community Treaty	Signed in November 1999	Government of Uganda
International Convention on the Elimination of All Forms of Racial Discrimination	Signed in October 1980	UHRC
International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families	Signed in October 1995	UHRC
International Covenant on Civil and Political Rights (including the First Optional Protocol on the ICCPR with reservations on Article 5)	Signed June 1995	UHRC
International Covenant on Economic, Social and Cultural Rights	Signed in January 1987	UHRC

Table 3.3-1 International Conventions and Agreements

Convention	Date Signed or Ratified	Implemented By
International Labour Organisation (ILO)[6] Convention C029: Forced Labour Convention, 1930 (No. 29)	Ratified in July 1963	Employment Act, 2006 Employment Regulations, 2011 Employment (Recruitment of Uganda Migrant Workers Abroad) Regulations, 2005 Employment (Employment of Children) Regulations, 2011 Equal Opportunities Commission Act, 2007 Labour Disputes (Arbitration and Settlement) Act, 2006 Labour Disputes (Arbitration and Settlement) (Mediation and Conciliation) Regulations, 2011 Labour Unions Act, 2006 Labour Unions (check – off) Regulations, 2011 Labour Union (Access of Union Officials to a Workplace) Regulations, 2011 Minimum Wages Boards and Wages Councils Act Cap 221, 1957 Workers Compensation Act Cap 225, 2000 Workers' Compensation Regulations, 2011
ILO C087: Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)	Ratified in June 2005	
ILO C098: Right to Organise and Collective Bargaining Convention, 1949 (No. 98)	Ratified in June 1963	
ILO C100: Equal Remuneration Convention, 1951 (No. 100)	Ratified in June 2005	
ILO C105: Abolition of Forced Labour Convention, 1957 (No. 105)	Ratified in June 1963	
ILO C111: Discrimination (Employment and Occupation) Convention, 1958 (No. 111)	Ratified in June 2005	
ILO C143: Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143)	Ratified in March 1978	
ILO C182: Worst Forms of Child Labour Convention, 1999 (No. 182)	Ratified in June 2001	
ILO C138: Minimum Age Convention, 1973 (No. 138)	Ratified in March 2003	
ILO C081: Labour Inspection Convention, 1947 (No. 81) (Excluding Part II)	Ratified in June 1963	Occupational Safety and Health Act, 2006
International Plant Protection Convention (IPPC), December 1951, amended 1997	Acceded in June 2007	Ministry of Agriculture, Animal Industry and Fisheries
Kyoto Protocol to the United Nations Framework Convention on Climate Change, December 1997	Ratified in 2005	Climate Change Department under the Ministry of Water and Environment National Climate Change Policy, 2015
Nile Basin Initiative, 1999	Ratified in August 2002	Ministry of Water and Environment
Paris Agreement, 2015	Signed in October 2016	National Climate Change Policy, 2015

[6] At the time of writing (June 2017) Uganda has ratified 31 ILO conventions, of which 30 are in force and one has been automatically denounced by convention C138: Minimum Age Convention, 1973 (No. 138). The full list of ILO conventions can be found on http://www.ilo.org.

Table 3.3-1 International Conventions and Agreements

Convention	Date Signed or Ratified	Implemented By
Protocol Agreement on the Conservation of Common Natural Resources	Signed in 1982	The Ministry of Water and Environment
Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa	Ratified in July 2010	Uganda Constitution, 1995
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), September 1998	Acceded August 2008	NEMA
Stockholm Convention on Persistent Organic Pollutants, 2001	Accession in July 2004	National Environment Act, Cap 153 Public Health Act Cap 281
Sustainable United Nations Sustainable Development Goals	Adopted in 2015	National Environment Management Authority (NEMA)
United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), March 1973	Signed July 1991	Uganda Wildlife Act, Cap 200, 2000
United Nations Convention to Combat Desertification, 1994	Ratified in June 1997	National Environment Act, Cap 153 Environmental Impact Assessment Regulation, 1998 Land Act, Cap 227 Local Governments Act, Cap 243 Water Act, Cap 152 Uganda Wildlife Act, Cap 200 National Forestry and Tree Planting Act, 2003 Prohibition of the Burning of Grass Act, Cap 33 Physical Planning Act, 2010
United Nations Framework Convention on Climate Change (UNFCCC), 1992	Ratified in 2005	National Environment Act, Cap 153
Vienna Convention for the Protection of the Ozone Layer (March 1985), and the Montreal Protocol on Substances that Deplete the Ozone Layer, September 1987	Ratified in September 1988	National Environment (Management of Ozone Depleting Substances and Products) Regulations 2001

3.4 International Guidelines and Standards

3.4.1 IFC Standards and Guidelines

The project will follow the standards and guidelines of the International Finance Corporation (IFC). Table 3.4-1 summarises the IFC documents that are or may be relevant to the project.

Table 3.4-1 IFC Standards and Guidelines

Document	Summary
IFC Performance Standards, 2012 and related guidance notes	IFC's Environmental and Social Performance Standards define IFC clients' responsibilities for managing their environmental and social risks. There are eight performance standards (PS) not all of which may be relevant to the projects: • PS1: Assessment and Management of Environmental and Social Risks and Impacts • PS2: Labor and Working Conditions • PS3: Resource Efficiency and Pollution Prevention • PS4: Community Health, Safety, and Security • PS5: Land Acquisition and Involuntary Resettlement • PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources • PS7: Indigenous Peoples • PS8: Cultural Heritage.
IFC General Environmental, Health and Safety (EHS) Guidelines, 2007	Contain examples of Good International Industry Practice (GIIP) on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. These general guidelines are supplemented by relevant industry-specific EHS guidelines.
IFC industry-specific EHS guidelines	The following industry-specific guidelines are applicable to the project components: • Crude Oil and Petroleum Products Terminals (2007) • Onshore Oil and Gas (2007) (being updated by the IFC with final version due in 2017) • Construction Materials Extraction (2007) • Waste Management Facilities (2007) • Water and Sanitation (2007)
IFC Good Practice for Cumulative Impact Assessment	IFC Good Practice Handbook (GPH) Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (IFC 2013) provides guidance for conducting an effective cumulative impact assessment (CIA). The IFC GPH presents a CIA process based on the concept of valued environmental and social components (VECs).

In addition to the above, IFC offers several good practice handbooks, covering social issues and stakeholder engagement, which will be consulted:

- 2009 IFC and EBRD Guidance note on Workers' Accommodation: Processes and Standards

- 2009 Handbook for Addressing Project-Induced In-Migration
- 2010 Strategic Community Investment: A Good Practice Handbook for Companies Doing Business in Emerging Markets
- 2002 Handbook for Preparing a Resettlement Action Plan
- 2007 Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets
- 2009 Good Practice Note Addressing Grievances from Project-Affected Communities
- 2009 Addressing Project Impacts on Fishing-Based Livelihoods
- 2009 Introduction to Health Impact Assessment
- 2009 World Bank Guidance note Mainstreaming Gender into Extractive Industries Projects.
- 2006 Non-Discrimination and Equal Opportunity.

3.4.2 Other International Good Practice Guidance

In addition to the IFC standards and guidelines, several other international organisations provide standards that are often referenced by the IFC or are acknowledged as providing useful information on good practice which will be consulted by the project. These include the:

- World Health Organization (WHO) guidelines on air quality, noise and drinking water
- International Petroleum Industry Environmental Conservation Association (IPIECA) guidance documents:
  - Integrating human rights into environmental, social and health impact assessments, 2013
  - Biodiversity and ecosystem services fundamentals – guidance document for the oil and gas industry, 2016
  - Guide to Social Impact Assessment in the Oil and Gas Industry, 2004
  - Community Grievance Mechanism toolbox, 2014
- International Association for Impact Assessment (IAIA) publications
- International Labour Organisation (ILO), which provides guidance on promoting rights at work, employment opportunities, social protection and discussion on work-related issues.
- International Association of Oil and Gas producers (OGP), specifically the following guidelines:
  - Guidelines for Waste Management with Special Focus on Areas with Limited Infrastructure. Oil & Gas Producers Report No. 413, September 2008 (rev 1.1 updated March 2009)
  - Principles for Impact Assessment – the Environmental and Social Dimension (August 1997).
- Cross-Sector Biodiversity Initiative:
  - Good Practices for the Collection of Biodiversity Baseline Data, 2015
  - Implementing the Mitigation Hierarchy, 2015
- Energy and Biodiversity Initiative:

  - Integrating Biodiversity into Environmental and Social Impact Assessment Process, undated
  - Good practice in the prevention and mitigation of primary and secondary biodiversity impacts, undated
- Nile River Basin Action Plan and Panel of Experts (POE), 1995
- Extractive Industries Transparency Initiative (EITI), 2007
- Multilateral Financing Institutions Biodiversity Working Group: Good practices for biodiversity inclusive impact assessment and management planning, 2015.

3.4.3 Relevant International Soft Law Instruments

The following soft law instruments are or may be relevant to the project and will also be consulted:

- Helsinki Rules on the Uses of the Waters of International Rivers, 1966
- UNEP Rules on Shared Resources, 1978
- Voluntary Principles on Security and Human Rights, 2000
- United Nations Guiding Principles on Business and Human Rights, 2011.

4 SCOPING STAKEHOLDER ENGAGEMENT

4.1 Introduction

Stakeholder engagement is an integral component of the environmental and social impact assessment (ESIA) process and the foundation for developing and maintaining the project's social licence to construct and operate. The projects have developed a stakeholder engagement framework, guidelines and plan that have guided the scoping engagement and will guide the ESIA engagement.

Stakeholder engagement undertaken during project scoping has influenced ESIA planning and the stakeholder engagement that will be undertaken during, and after, the preparation of the ESIA. The stakeholder engagement activities completed and planned for the ESIA align with Ugandan and international requirements (e.g., International Finance Corporation Performance Standards). Stakeholder engagement requirements are included in several Ugandan policy and legislative frameworks and outlined specifically in the Environmental Impact Assessment Regulations, 1998 and the Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda, 2014.

Engagement provides stakeholders with the opportunity to contribute to the ESIA by providing a means to express their views and concerns about the project and the ESIA process, potential impacts and mitigation measures. Stakeholder engagement is inclusive and targets all stakeholder categories such as government, civil society, directly affected people and communities, with a particular focus on women and those vulnerable to potential impacts.

This section includes:

- the stakeholder engagement activities undertaken during the scoping phase for both the Tilenga feeder pipeline and the EACOP project up to the Ugandan border.
- the strategy to be adopted for stakeholder engagement during, and after, the preparation of the ESIA.

4.2 Stakeholder Consultations – Scoping Phase

This section summarises the ESIA scoping phase stakeholder engagement process for both the Tilenga feeder pipeline and the EACOP project. The following are stakeholder related appendices:

- Appendix B – Stakeholders and Institutions Consulted
- Appendix C – Stakeholder Concerns
- Appendix D – Record of Stakeholder Engagement.

The objectives of the scoping phase engagement were to:

- identify stakeholders
- provide stakeholders with an overview of the proposed project activities, the potential impacts and opportunities and an understanding of the ESIA process

- document stakeholder views, concerns and expectations to inform the development of the scope of the ESIA, including the development of the valued environmental (and social) components (VECs).

As detailed in the Stakeholder Engagement Plan, stakeholders are persons or groups external to project that may be affected by, have an interest in, or may have influence over the project. Stakeholders were identified by:

- project personnel and local expert knowledge and experience
- previous ESIAs and other studies conducted in the area
- GIS analysis of the AOI
- site visits undertaken by stakeholder engagement team comprising project personnel and the local expert consultants employed by the project
- key stakeholder interviews
- stakeholders identifying other stakeholders during meetings.

The following stakeholder categories and subcategories were identified.

Authorities:

- central government
- local government
- community leaders and elected officials
- health and educational institutions.

Directly affected groups:

- landowners
- local residents
- farmers (non-land owning)
- fisher folk
- hunters and gatherers
- pastoralists
- shopkeepers
- traders
- minorities
- refugees
- children
- elderly
- women.

Civil society:

- community groups and community-based organisations
- media
- nongovernmental organisations (NGOs)
- religious leaders.

Others:

- business sector
- professional organisations
- research institutions
- tourism operators.

Stakeholder identification will be ongoing throughout the engagement part of the ESIA process. Appendix B lists stakeholders consulted during the scoping phase.

During the scoping activities of an ESIA process, a sample of stakeholders was selected due to feasibility and the defined scope. As such, district and subcounties were selected based on the AOI. Sixteen villages were selected within this AOI, across the nine districts along the pipeline route (see Figure 4.2-1). These villages were identified by an analytical process of classifying:

- the land uses
- locations of social and environmental sensitive areas (cultural heritage sites; security (conflict); refugee camps; important biodiversity areas) as set out in the screening report and other sources
- the mapped VECs
- locations of the proposed aboveground installations (AGIs).

Government ministries and directorates were selected based on a stakeholder mapping exercise undertaken by EACOP as well as the ESIA team's experience of consultation.

An NGO umbrella organisation, the Civil Society Coalition on Oil and Gas (CSCO), which represents a consortium of national and international NGOs and community-based organisations (17 members and 14 associated members) already involved in the oil sector, was selected to be engaged during the scoping phase owing to the representative membership.



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Lake Kyoga
Lake Victoria
Tilenga CPF
NGWEDO
BULIISA
BUTIABA
BIISO
KIGOROBYA
KIHUNGYA
BUSERUKA
Kabaale Hub
BUGAMBE
KIZIRANFUMBI
BUHIMBA
KASIITA
MPASAANA
GAYAZA
NKOOKO
NTWETWE
BUTOLOOGO
MADUDU
KITENGA
MADDU
LUGUSULU
SEMBABULE TOWN COUNCIL
MIJWALA
LWEBITAKULI
LWENGO
LWENGO TOWN COUNCIL
NDAGWE
KASAALI
KAMPALA
Paidha
Padyere County
Nwoya County
NWOYA DISTRICT
OYAM DISTRICT
KOLE DISTRICT
Oyam County
Kole County
Lira
Erute County
LIRA DISTRICT
KIRYANDONGO DISTRICT
Kibanda County
Kiryandongo
Apac
APAC DISTRICT
Dokolo County
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Kwania County
Maruzi County
Kioga County
Amolatar
Masindi
MASINDI DISTRICT
Buruuli County
Buliisa
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BULIISA DISTRICT
Bugahya County
Hoima
HOIMA DISTRICT
Buhaguzi County
Kalangala
KYANKWANZI DISTRICT
Euruli County
NAKASEKE DISTRICT
Nakasongola
NAKASONGOLA DISTRICT
Budiope County
BUYENDE DISTRICT
Nakaseke
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Kayunga
Bugabula County
Kamuli
Bbaale County
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Buzaaya County
Ntoroko County
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Bugangazi County
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Buyanja County
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Kakumiro
KIBOGA DISTRICT
Katikamu County
Luwero
LUWERO DISTRICT
KYENJOJO DISTRICT
KIBAALE DISTRICT
Bundibugyo
Burahya County
Mwenge County
Kyenjojo
KYEGEGWA DISTRICT
Mubende
Kassanda County
KABAROLE DISTRICT
Kyegegwa
MUBENDE DISTRICT
Mityana County
Busiro County
Nakifuma County
MUKONO DISTRICT
JINJA DISTRICT
Njeru
Jinja
Kibale County
KAMWENGE DISTRICT
Kyaka County
Kasambya County
Mityana
MITYANA DISTRICT
Wakiso
Mukono
Buikwe County
BUIKWE DISTRICT
Mpigi
Mukono County
Kasese
Kamwenge
KASESE DISTRICT
Gomba County
GOMBA DISTRICT
Kanoni
Lwemiyaga County
SEMBABULE DISTRICT
Kazo County
Busongora County
Ibanda County
Ibanda
Kiruhuura
Kabula County
Sembabule
Mawokota County
WAKISO DISTRICT
Buvuma Islands County
Kalungu County
Kalungu
MPIGI DISTRICT
KALANGALA DISTRICT
Bukomansimbi
Mawogola County
Bunyaruguru County
RUBIRIZI DISTRICT
Buhweju County
Kihiihi
Nyabushozi County
Lyantonde
LWENGO DISTRICT
Masaka
Bukoto County
Bujjumba County
Kyamuswa County
BUVUMA DISTRICT
Kashari County
KIRUHURA DISTRICT
Lwengo
Igara County

4.2.1 Stakeholder Engagement Preparation

During the stakeholder identification process, key stakeholder meetings were preceded by disclosure of the project information and ESIA process:

- Radio announcements on local stations in English and local languages (Rugungu, Runyoro, Luganda, Runyankore or Rukiga, Alur) were made at least 10 days before stakeholder engagements. These announcements were to bring the project to the attention of the public and aimed to mobilise the relevant communities to attend the planned meetings.

The following steps to organise the meetings accompanied the announcements:

- A reconnaissance visit was undertaken by the stakeholder team two weeks before engagements with the selected villages and their subcounty and district governments to announce the forthcoming public meetings and to obtain commitment from the village and government officials to mobilise the local people to attend.
- A phone call was made to the local council chairmen a week before the proposed village meetings confirming dates and venues
- Local council chairpersons were requested again a day before each meeting to mobilise people.

For meetings with district, subcounty and national government stakeholders, the following preparation was made:

- Invitations were sent through letters delivered by hand one week before the proposed. The invitations were accompanied by disclosure of the project information and ESIA.
- As follow up, nearer the time of the meeting, a confirmation phone call to the contact person was to confirm the event, the time and place.

4.2.2 Meetings

Meetings were held for the Tilenga feeder pipeline and the EACOP project with (see Figure 4.2-1 for meeting locations):

- 16 villages
- 33 subcounties
- 9 districts
- 9 district health authorities
- 14 national level organisations including government agencies
- the Civil Society for Oil (CSCO), an umbrella organisation of NGOs. Thirteen NGOs were represented at the meeting.

The following meeting protocol was adopted:

- Meetings were held by the ESIA stakeholder engagement team and representatives of the Pipeline Project Team (PPT).
- Meetings were held in relevant local languages or English if appropriate.
- Two background information documents, one outlining the project and one outlining the ESIA, in relevant local languages, were distributed to the participants.

- At the start of the meeting, it was emphasised that it was important for women to participate.
- Meetings started with a prayer and opening remarks by the chairperson (each meeting appointed its own chairperson) and introductions. This was followed by a presentation on the project and the ESIA using a PowerPoint presentation at national level and posters at district, subcounty and village level. The meetings introduced the grievance mechanism that the project will use and manage.
- After the presentation, a question and answer session was held.
- Attendance registers were completed and all questions and responses were recorded.

A project stakeholder engagement database holds data from all stakeholder meetings.



Figure 4.2-2 Stakeholder Meeting at Kamuli Village



Figure 4.2-3 Stakeholder Meeting with Rakai District Local Government

4.2.3 Stakeholder Concerns and Project Responses – Tilenga Feeder Pipeline and EACOP Project

This section presents the main concerns raised by the stakeholders about the export pipeline route during the scoping phase and some project responses. Appendix C includes a more comprehensive list of the concerns and project responses. Appendix D presents a full record of all meetings.

The concerns are categorised into the following categories:

- socio-economic and health matters
- project information
- stakeholder engagement (ESIA related)
- stakeholder engagement (project related)
- archaeology and cultural heritage
- biodiversity
- ESIA and mitigation measures
- physical environment.

Figure 4.2-4 shows the relative frequency of the categories of concern for the stakeholders. The figure shows that the majority of the project concerns are about socio-economic and health matters. Concerns about the ESIA, project information and stakeholder engagement were also prevalent.

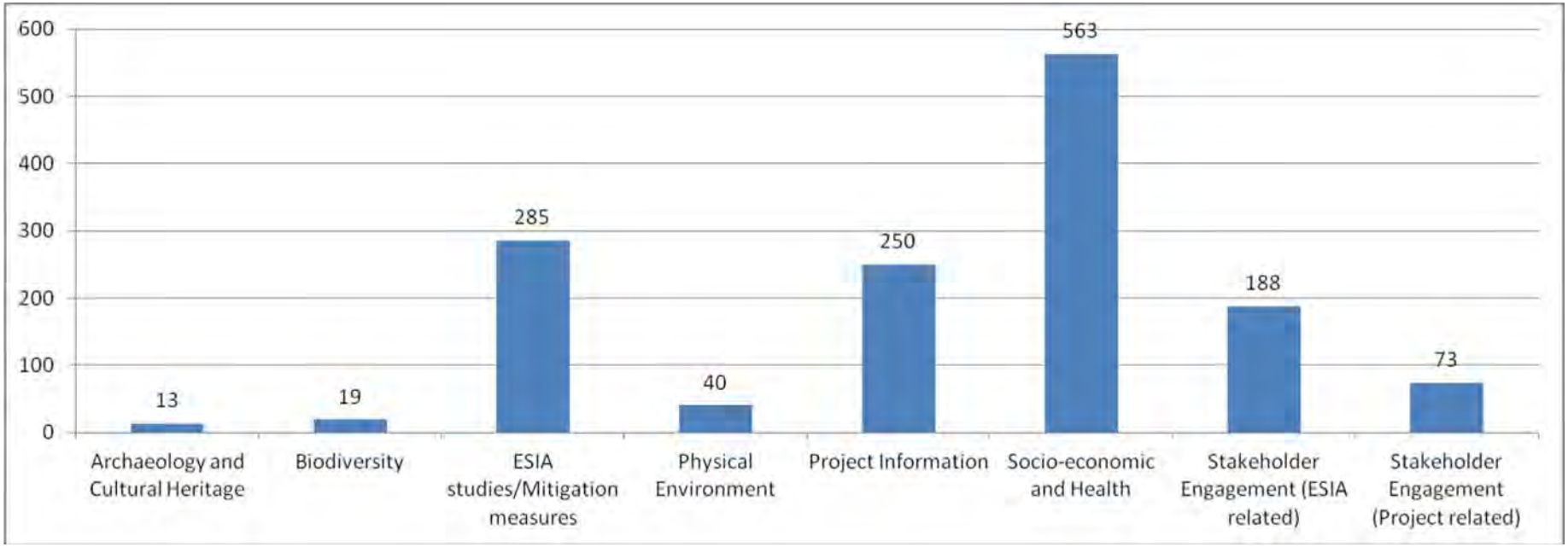

Figure 4.2-4 Relative Frequency of Categories of Concern – EACOP Project

NOTE: The numbers indicate the number of concerns raised in that category.

4.2.3.1 Socio-economic and Health

The most common concerns recorded in this category are presented below and more detail is provided in Appendix C's summary table.

Land and Property

A recurrent concern throughout the engagement for all stakeholder categories was compensation for loss of land, livelihoods and properties. Stakeholders emphasised the shortage of land in project-affected districts so replacement land would be difficult to find. In addition, it was indicated that most land for the proposed pipeline route is already under scrutiny from land-grabbers or land speculators because of the project, rendering the present occupants of the land more vulnerable. The need to make sure that compensation is done in a timely and project-affected people receive adequate compensation to be able to rebuild their lives was a constant theme throughout the consultations.

Another key concern was the potential conflict between owners and tenants over project-acquired land. Scoping consultation found that most tenants do not have rental or tenancy agreements with owners, and many owners do not have access to their own title deeds resulting in concerns around security of tenure and rights attached to land use. Types of land ownership and tenancy along the proposed pipeline route are leasehold, freehold (both privately owned and Kabaka or King land), and *mailo*, with freehold and *mailo* being closely related, see Section 6 for further details relating to types of land ownership.

The importance of including vulnerable groups, particularly women and children, in all compensation and resettlement-related discussions was emphasised.

Local stakeholders expressed confusion about the project right-of-way (RoW) and sought clarity on whether this would be associated with permanent or temporary land take across the width of the RoW.

As an initial response to the concerns raised, stakeholders were informed that the project will manage land acquisition by developing a resettlement action plan, including a livelihood restoration plan, which will be informed by various socio-economic baseline studies. An entitlement framework will be developed to ensure fair compensation while the livelihood restoration plan will ensure that impacts on livelihoods will be mitigated. During the ESIA and resettlement planning phases, there will be ongoing engagement with affected stakeholders, including vulnerable groups, to update them on the plans and receive their input.

In-migration

Concerns were stated at the national and regional level meetings on in-migration and influx management in areas close to project construction and operational sites. A common perception was that women and girls could be victimised by construction workers. Fears regarding construction camps were widespread with the expectation that these may drive an increase in HIV and AIDS rates, reduce water and electricity availability, utilise healthcare resources and contribute to family breakdowns.

Stakeholders were informed that the potential for influx and the associated negative impacts will be addressed in the social impact assessment and health impact assessment and mitigation measures developed.

Economy and Standard of Living

All stakeholder categories were interested in the potential benefits of the project for Uganda as well as for local and regional communities in proximity to the project. Local benefits were viewed in terms of employment and training opportunities and the procurement of goods and services. Emphasis was placed on the importance of project compliance with national local content requirements to ensure that local skills and labour are used wherever possible. Community stakeholders, however, were concerned that it would be difficult to benefit from employment because of the lack of pipeline and facilities construction and operation skills in the local workforce.

In response to the concerns raised the stakeholder engagement team stated that a local content plan will be developed by the project, compliant with Ugandan local content requirements, which will include commitments to local procurement, capacity building and employment.

Community Health and Safety

All stakeholder categories raised the issue of community health and safety with the main areas of concern being about the heated pipeline (see Section 2.2.4) and the effect that the heat would have on people, animals, soils and crops.

In addition, comments were made about road safety and potential accidents. It was indicated that Uganda has one of the highest rates of traffic-related fatalities per vehicle in the world, and a major concern was the effect that increased traffic would have on both people (mainly children) and animals. People cited speed as being the main cause of fatalities and were worried about construction vehicles sharing roads with local road users.

Stakeholders were informed that a community health impact study will be undertaken and associated community health management plan developed that will address the concerns raised.

The project will also prepare a traffic impact assessment as part of the ESIA, and a more in-depth traffic impact assessment will be prepared as part of detailed engineering that will include location specific mitigation measures.

4.2.3.2 Physical Environment

Concerns were raised about potential effects on quality of, and availability to, community water sources. It was feared that the project would need to extract water from community water sources rendering these insufficient to meet local requirements.

There were concerns that the heat from the pipeline would affect the soils and decrease soil fertility or affect crops planted in the 10-m RoW.

The stakeholder engagement team informed stakeholders that water assessments will be undertaken to ensure that project requirements can be met without affecting local water requirements.

Air and Climate Change

Concerns were raised on potential project effects on air quality and climate change during the construction and operational phases.

The stakeholder engagement team explained that the project engineering team will evaluate alternative equipment with the objective of project compliance with applicable emission standards. The engineering team will collaborate with the ESIA team who will assess project effects on air and climate change and identify mitigation measures that may be required.

4.2.3.3 Biodiversity

Stakeholders raised concerns about the impact of the project on Lake Albert fisheries and animal and plant biodiversity in the project area.

Impact on ecosystem habitats during construction of the pipeline was raised mostly in national consultations. Impact on sensitive ecosystems such as forests, wetlands and wildlife reserve, which are habitats for several species particularly during the construction phase, was a concern. Concerns were also raised regarding connectivity to protected areas and potential effects on endemic species.

Stakeholders were informed that biodiversity studies and an ecosystem services study will be undertaken to assess project effects on fisheries and other animals and plants as well as the extent of the human dependencies on such and to develop mitigation measures that may be required.

4.2.3.4 Project and ESIA-Related Matters

Stakeholder Engagement

Stakeholders raised questions about the grievance mechanism, project community liaison officers (CLOs) and the process for providing feedback after the completion of field surveys and the ESIA. Recommendations were made on communication channels with local communities, new stakeholders to include in the next round of consultations, and the protocol for meetings, particularly about per diem payments for meeting attendance.

The stakeholder engagement team provided project background information documentation, which includes information on stakeholder communication. The stakeholder engagement planning for the next phases will be revised to integrate recommendations received.

4.2.4 Stakeholder Concerns – Tilenga Feeder Pipeline

The concerns raised by stakeholders about the Tilenga feeder pipeline during the scoping phase engagement were the same as those along the EACOP project (see Figure 4.2-4 and Figure 4.2-5). Both figures show that the majority of the concerns are about socio-economic and health matters. Concerns about the ESIA process and mitigation, detailed project information and stakeholder engagement were also prevalent.

Proportionally, concerns addressing biodiversity and ESIA-related stakeholder engagement were raised more often, and project-related stakeholder engagement

concerns were raised less often along the feeder pipeline. However, stakeholders voiced the same concerns making it unlikely that these differences reflect a real difference in stakeholder perceptions thus supporting a similar stakeholder engagement approach that will be applicable for the projects using separate background information document (BID) relevant to each project.

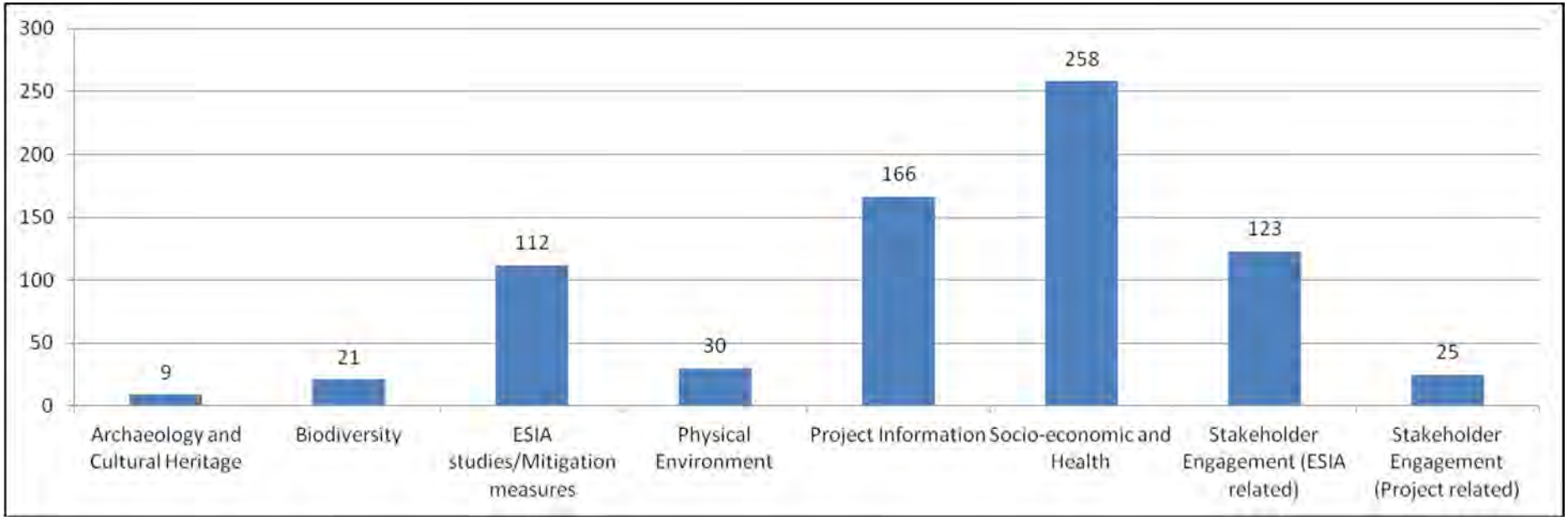

Figure 4.2-5 Relative Frequency of Categories of Concern – Tilenga Feeder Pipeline

NOTE: The numbers indicate the number of concerns raised in that category.

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4.3 Next Steps for the Stakeholder Engagement

For consistency, elements of the scoping stakeholder engagement approach described in Section 4.2 will be built upon for the approach during the preparation of the ESIA.

During future baseline data collection field surveys, additional stakeholders may be identified and the stakeholder engagement planning for future phases will be updated accordingly.

Stakeholder engagement for the ESIA will be conducted in parallel to the social baseline study. Further stakeholders have been identified to engage with during the next phase and consist of:

- authorities
- directly affected groups
- civil society
- others.

Stakeholder input will be recorded, taken into account and considered for the impact assessment and the detailing of appropriate mitigation measures.

When the draft ESIA report is complete, further stakeholder engagement will be undertaken. The consultation will serve to inform stakeholders of the results of the impact assessment and mitigation measures to be applied and to receive concerns, comments and recommendations that will be considered and incorporated into the final ESIA report. Approach and protocols to setting up these meetings will be similar as during the scoping phase and will include a presentation on the ESIA, with posters used for communities, subcounties and districts, and a PowerPoint presentation for national meetings.

When the ESIA is completed, a nontechnical summary will be distributed to stakeholders and engagement activities will continue through the ESIA approval process, including the public disclosure and public hearings process managed by NEMA, and during the subsequent expected project construction, operation and eventual decommissioning phases.

4.3.1 Continuous Stakeholder Engagement

Following on from the ESIA, the project stakeholder engagement team will continue to engage with stakeholders at national and local level as relevant as well as manage the project grievance mechanism. Stakeholders will have the opportunity to raise concerns, report grievances or ask questions.

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5 KEY PROJECT IMPACTS AND RISK ANALYSIS

5.1 Introduction

This section includes:

- a description of the key potential environmental and social impacts identification process
- measures incorporated into the project design, good practice, and preliminary proposed specific mitigation measures that will contribute to the enhancement of potential beneficial effects and the avoidance or reduction of adverse potential impacts
- potential residual impacts
- a scoping assessment of residual impact significance.

The purpose of the scoping phase impact assessment is to identify potential significant impacts, both beneficial and adverse, for further assessment in the ESIA and to screen out not significant impacts, which should require no further assessment. As the potential effects of the EACOP and Tilenga feeder pipelines are considered similar, a consolidated scoping assessment was conducted.

5.2 Impact Identification

The process of impact identification commenced during the route corridor selection process at the east African regional level; see Section 2.2.3 on route corridor selection. During scoping, impact identification was progressed for the selected corridor by:

- a social and environmental identification (SENVID) process, comprising workshops and meetings with subject matter experts
- a site visit to identify technical, environmental and social sensitivities and measures to avoid or mitigate potential impacts
- stakeholder engagement.

Impacts identification and risk analysis during scoping were based on the teams' collective pipeline, environmental and social impact knowledge and experience including:

- general and specific pipeline project engineering design
- impact assessment lessons learned from other pipeline projects
- other oil and gas projects in Uganda
- environmental and social conditions within the project area acquired during route and site selection studies and knowledge of documentation available at the time of the assessment.

The end product of this exercise is the project preliminary impacts assessment table (impact table) included in Appendix E, which provides a scoping-level

assessment of potential impacts and, if applicable, associated significant residual impacts. The table includes:

- the applicable project phase: pre-construction and early works, construction and pre-commissioning, commissioning, operations and decommissioning
- those activities identified as having the potential to result in impacts, both beneficial or adverse e.g., open watercourse crossings and employment of workers
- the aspect of the activity causing an impact, e.g., disturbance of watercourse and banks, and presence of nonlocal workforce
- the activities associated with the project components, e.g., camps operations, AGI, pipeline maintenance
- activity mode: whether the activity takes place under normal operations or occurs during accidental events or abnormal operations
- the activity's potential impact without mitigation
- an assessment of the potential residual impact on the project identified VECs (described in Section 1.4.2.2) after mitigation.

The preliminary impact identification process was refined further after additional data collected during scoping became available. Updating of impacts will continue during the preparation of the ESIA with the application of the full impact assessment process, and the impact table will be reviewed and updated as required. Additional information may include changes to the project design, construction methods or changes resulting from data acquired during baseline data collection.

5.3 Mitigation Measures

Mitigation of potential impacts is an integral part of project development, from FEED through to construction, operation and decommissioning. At the time of writing (July 2017), the project is in the FEED phase and the following mitigation measures have been integrated into the project design:

- an evaluation and selection of the pipeline corridor based on environmental, social and engineering considerations. This evaluation is described in Section 2.2.2, Pre-FEED and FEED and Section 2.2.3, Route and Site Selection.
- avoidance of locations of high environmental and social sensitivity by planning a construction strategy that minimises the need for temporary construction sites, supported by site visits and an evaluation of maps and imagery.

The design and construction of pipelines has evolved over many years and a substantial body of good design, construction and operational practices that contribute to impact mitigation exists. The following good practices are being implemented by the project:

- minimisation of the overall footprint
- consideration of stakeholder concerns during routing and siting of AGIs and temporary facilities
- chance find protocols for cultural heritage sites and artefacts detected during earth-moving activities
- soil management measures, including topsoil segregation to enhance natural revegetation after reinstatement

- burying the entire pipeline along the route to reduce permanent habitat fragmentation, interference with third parties and security concerns
- measures to reduce sediment release during watercourse crossings
- reinstatement of the RoW and reinstatement for temporary construction sites, camps after completion of construction
- good engineering practice.

The ESIA and technical teams suggested other impact-specific mitigation measures. During the SENVID process, the measures were considered as potentially feasible options to avoid or limit the impacts. The relevant mitigation measures from this process will be described in the ESIA with additional measures derived from the full assessment.

5.4 Preliminary Residual Project Impacts

During scoping, preliminary potential residual project impacts were identified and registered in the impact table, see Table 5.5-1. Residual project impacts are those impacts which will remain after mitigation measures associated with routing and site selection, good practice and impact specific measures applied to the preliminary identified impacts. The residual impacts were considered, as described in the next section.

5.5 Residual Impact Assessment and Risk Analysis

Residual impacts were considered and allocated a preliminary ranking based on the definitions provided below:

- Beneficial (B) impacts are positive effects on environmental and socio-economic VECs.
- Not significant (NS) residual impacts are those which
  - occur in a VEC in a localised way over a short period of time similar to natural variation and are unlikely to have any measurable impacts on the integrity of the VEC as a whole, or
  - have a negligible effect on communities, are of very short duration, are extremely localised or affect communities in a way similar to small random changes owing to natural socio-economic fluctuations.
- Potentially significant (PS) residual impacts are adverse impacts that do not meet the definition of not significant.

Potentially beneficial and adverse significant residual impacts have been extracted from Appendix E, Project Impacts, and included in Table 5.5-1.

Potential beneficial impacts include:

- the export of oil during operation generating government revenue and contributing to the economy
- short-term employment opportunities during the construction phase and, to a lesser extent, permanent skilled employment opportunities during operations
- the provision of local goods and services that will create revenue and associated employment opportunities during the construction phase

- capacity building through employment, training and support for Ugandan businesses and services
- leasing land increased revenue through rentals, supplying construction materials generates income and may lead to temporary job opportunities
- improved transportation infrastructure due to project access roads and improvements to the existing road network
- the identification of tangible cultural heritage that can be studied and support academic research

The potential adverse significant impacts that have been identified are mainly associated with:

- temporary and permanent land requirements
- land clearance, grading, trenching and blasting
- risks to community safety from traffic movements associated with transportation of materials, equipment and people
- construction of watercourse crossings
- waste management
- construction of access roads, access road improvements and upgrades of the national road network (leading to induced development and in-migration)
- presence of nonlocal workers
- specific impact concerns raised by stakeholders, which is described in more detail in Section 4 and Appendix C
- impact on livelihoods during construction phase.

The residual impacts graded potentially significant are proposed to be the focus of the ESIA and are the basis for the ESIA terms-of-reference scope of work included in Section 8.4. Residual impacts graded to be not significant will not be addressed in the ESIA, but the mitigation measures required to render these effects not significant will be included in the commitments register and the management plans.

Table 5.5-1 Beneficial (B) and Potential Significant (PS) Adverse Impacts

Project Phase	Activity	Aspect	Potential Impact	Bioc
Construction	Surveys during design phase (e.g., stakeholder engagement, baseline field surveys, site visits, G&G surveys)	Physical presence of people, vehicles and equipment	Potential for disturbance to cultural heritage: chance finds; beneficial impacts from increase in employment and supply of goods and services	
Construction, Operations	Land requirements - temporary and permanent RoW, access roads, temporary construction facilities (e.g., camps, pipe yards, coating plant); other temporary work areas	Land purchase or lease Change of land use Access restriction	Disruption to movement of wildlife; permanent loss or conversion of habitat; temporary loss of habitat; degradation and fragmentation of habitat; increased hunting or poaching as a result of facilitated access; effects on land use (e.g., agriculture, timber, cash crops); effects on livelihoods; effects on tourism and recreational areas; disruption of access to land and resources (e.g., water; restrictions on fishing and hunting); disruption of access to infrastructure (e.g., community well); movement of livestock; effects on social cohesion and conduct resulting from compensation payments (e.g., concern on compensation levels, spending of compensation payments)	PS
Construction, Operations		Land speculation	Increased pressure on land use; displacement of owners and users from land; increase in land prices	--
Construction, Decommissioning	Construction machinery and workforce activity	Use of vehicles and equipment and workforce activity	Change in acoustic environment for wildlife and community resulting in disturbance; light, odour and dust disturbance	PS
Construction, Decommissioning			In-migration with increased demand for accommodation, food and other resources and transportation; utilisation of local community services, e.g., health resources and facilities; inflation	--
Construction, Decommissioning			Potential for wildlife mortality from increased traffic; community health and safety; community inconvenience from increased traffic	PS
Construction, Decommissioning			Disconnect between business opportunities available and expectations; disputes over business opportunities	--
Construction		Abstraction of water	Depletion of stream flow; use of community water resource	--
Construction, Decommissioning		Use and storage of chemicals (e.g., oxygen scavengers, biocides, corrosion inhibitors, solvents, thinners, paints)	Effects on fisheries from spillage	--
Construction,		Use of vehicles and equipment – oil and chemical	Effects on soil quality, surface water quality, groundwater quality and	--

Table 5.5-1 Beneficial (B) and Potential Significant (PS) Adverse Impacts

Project Phase	Activity	Aspect	Potential Impact	Bioc
Construction, Operations, Decommissioning	Waste generation	Generation, storage and transport of inert waste, domestic waste, hazardous waste	Potential impacts on existing waste infrastructure	--
Construction, Operations		Management of liquid waste: sewage, grey water, stormwater	Potential impacts on existing waste infrastructure	--
Construction, Operations		Pipeline pigging waste: wax, small amount of water and sediment, no gaseous emissions anticipated (stabilised crude oil)	Potential impacts on existing waste infrastructure	--
Construction	Trenching and horizontal directional drilling (HDD) pits	Ground excavation	Disturbance to cultural heritage; damage to cultural heritage, including potentially beneficial impact of increased information from assessment of finds	--
Construction			Alteration of drainage patterns	PS
Construction		Presence of open excavation	Potential impacts on community and livestock safety	--
Construction			Wildlife safety; disruption of migratory routes	PS
Construction	Trenching – blasting	Use of explosives	Potential impacts community health and safety	--
Construction			Change in acoustic environment and vibration	--
Construction			Effect on landscape and visual amenity	--
Construction			Wildlife disturbance	PS
Construction	Pipe, equipment, materials and personnel delivery to RoW and worksites, including abnormal loads and pipe-joint coating chemicals)	Transport of line pipe, equipment, plant and people by rail and road	Traffic and rail disruption; risks to community safety; road capacity temporary restrictions; accidental damage to infrastructure; deterioration of roads and tracks; vehicle emissions; community health impacts, risk of commercial sex work, sexually transmitted infections trafficking of goods; opportunities to supply goods and services to drivers (e.g., at truck stops); creation of influx to supply goods and services	--
		Transport of line pipe along		

Table 5.5-1 Beneficial (B) and Potential Significant (PS) Adverse Impacts

Project Phase	Activity	Aspect	Potential Impact	Bio
Construction	Open cut watercourse crossings	Removal of vegetation Installation of temporary vehicle crossings (e.g., flume pipes, bridge); disturbance of watercourse banks and bed Creation of temporary dams and over pumping (possibly); pipe installation; operation of plant	Effects on aquatic and riparian habitats; alteration of ecological or landscape processes – modified river flow; flooding; sediment release; soil erosion or loss – bank erosion	PS
Construction	HDD	Preparation and operation of HDD site (24-hour operation) Use of machinery and drilling fluids Drill cuttings disposal Laying of mud return lines Site lighting	Effects of chronic leak (drilling fluid break out) on aquatic ecosystem and fisheries; temporary habitat loss; wildlife disturbance from site lighting and noise	PS
Construction	Open-cut road crossing	Excavation of road; pipe installation, backfill and reinstatement	Noise; presence of open excavation (very short term); transport disruption	--
Construction	Open-cut rail crossings	Removal of rails, ballast and sleepers; trench excavation; pipe installation; reinstatement	Noise; transport disruption	--
Construction	Non-open-cut road and rail crossings (auger bore, pipe jack, microtunnel)	Excavation of pits; pipe installation; spoil disposal	Change in acoustic environment for wildlife resulting in disturbance	PS
Construction, Decommissioning	Aggregate extraction and borrow pits	Extraction of construction materials and fill from quarries or borrow pits	Dust generation; noise; traffic disruption, depletion of community natural resources; positive economic benefits	--
Construction, Decommissioning	Other material sourcing	Extraction of other construction materials, e.g., timber	Dust generation; depletion of community natural resources; traffic disruption	--
Operations			Increased levels of poaching, hunting and collection of natural resources, e.g., timber, plants	PS

Table 5.5-1 Beneficial (B) and Potential Significant (PS) Adverse Impacts

Project Phase	Activity	Aspect	Potential Impact	Bio
Operations			Increased access to cultural heritage sites	--
Construction, Operations	Regional road improvements and upgrades 7	Road operation	In-migration encouraged by use of the roads as a main transport route potentially leading to community health effects, traffic safety; traffic disruption; inflation; potential positive effects from road improvements, e.g., easier access for tourism, safer roads; better access to health care and other physical resources	--
Construction, Operations, Decommissioning	Employment of workers	Employment of local workforce	Beneficial effects of local employment: skills development, enhanced local economy and therefore purchasing power	--
Construction, Operations, Decommissioning		Recruitment policies	Employment expectations and competition for employment; conflict within and between communities	--
Construction, Operations, Decommissioning		Grievance procedures	Dissatisfaction with worker grievance procedures or outcomes	--
Construction, Operations, Decommissioning		Industrial relations	Dissatisfaction; worker grievances	--
Construction, Operations		Presence of non-local workforce	Community may experience changes in social conditions; cultural conflicts; disrespectful behaviour; theft; vandalism; verbal harassment and threats; physical violence; effects on traditional way of life. Most risk from temporary construction camps	--
Construction, Operations			Spread of infectious diseases. Most risk from temporary construction camps	--
Construction, Operations			In-migration with increased demand for accommodation, food and other resources and transportation; utilisation of local community services, e.g., health resources and facilities; inflation. Most risk from temporary construction camps	--
Construction, Decommissioning			Downsizing the workforce at the end of construction or during decommissioning	--
			In-migration to service pipeline, AGI and temporary facility	

Table 5.5-1 Beneficial (B) and Potential Significant (PS) Adverse Impacts

Project Phase	Activity	Aspect	Potential Impact	Bio
Operations	Pipeline operation	Operation of erosion control structures and reinstatement; natural processes	Erosion and soil loss from poorly functioning or damaged erosion control structures	--
Operations		Underground heating of pipeline	Thermal effects on vegetation and soil processes	PS
Operations		Theft of high-voltage cable	Effects on community safety	--
Operations		Spills and leaks including from intentional damage, sabotage and cold tapping, and accidental damage	Effects on wildlife, surface water quality, groundwater quality, soil quality and community health from oil release	PS
Construction, Operations	AGI and temporary facilities operations (camps are to be closed and no alcohol allowed = dry)	Presence of personnel and operation of equipment including movement of heavy items, e.g., pipe at temporary pipe yards	In-migration; increased traffic	--
Construction, Operations			Induced impacts on wildlife and effects on community health as a result of in-migration associated with the establishment and operation of construction camps	PS
Construction, Operations		Delivery of equipment and materials	Transport disruption; deterioration of roads and tracks	--
Construction, Operations		Fire and explosion	Effects on wildlife, soil quality, surface water quality, ground water quality from fire and spills; effects on community health and safety, and worker health and safety	PS
Construction, Operations		Supply of process and potable water	Competition for resources	--
Operations	AGI maintenance	Access for cranes and other machinery	Traffic disruption	--

6 PROJECT AREA OF INFLUENCE AND EXISTING BASELINE CONDITIONS

6.1 Introduction

During scoping, an initial definition of the potential area of influence (AOI) and the environmental and social conditions was made. Both will be refined during the preparation of the ESIA.

This section includes:

- the area of influence
- existing environmental and social baseline conditions.

6.2 Area of Influence

To identify, assess and manage potential environmental and social impacts, the potential area of influence (AOI) of the projects needs to be defined.

IFC Performance Standard (PS) 1, paragraph 8 (IFC 2012), defines the area of influence as encompassing the following components:

- "The area likely to be affected by:
  (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project
  (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location, or
  (iii) indirect project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project, would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly affected by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted."

The potential AOI will include, and will be defined, by:

- the permanent footprint, associated with the operational right-of-way (RoW) for the pipelines and the other operational facilities such as the pumping stations and new permanent access roads
- the temporary footprint associated with construction and other sites, such as temporary access roads, borrow pits and waste management facilities, required to construct the projects
- the area outside the footprint potentially affected by direct impacts such as noise and dust

- the area potentially affected by indirect impacts such as villages and towns affected by in-migration of contractor workers.
- the area potentially affected by unplanned events, such as oil spills during construction and operation
- the study areas defined for the VECs
- the area used for assessing cumulative impacts, which is defined as the area of the project's impacts on VECs and, in addition, the area affected by other past, present and future activities, including associated facilities, third-party projects and development induced by the project that may also affect the same VECs.

The study area for each VEC will take account of the AOI, but may be larger than the AOI to understand the context in which the VECs exist, including trends and pressures on the condition of the VECs. Examples of a study area larger than AOI are regional study areas for greenhouse gas emissions, economy and biodiversity (e.g., chimpanzee habitat).

The AOI will be different for the pre-construction (early works), construction, operation and decommissioning phases of the projects. The AOI will also be different for each VEC.

Definition of the spatial extent of the AOI for each VEC will be based on several considerations including:

- project aspect generating the impact (e.g., excavation, construction traffic, local labour employment)
- distance from the source of impact in which the VEC is affected (e.g., distance outside a construction site where noise levels exceed the project standard or distance downstream that sediment generated by pipeline installation at watercourse may travel)
- the spatial extent of the affected VEC (e.g., range of the affected species)
- the sensitivity of the VECs affected (e.g., a hospital compared to an industrial area for noise levels)
- international good practice.

The AOI will be defined on a precautionary, realistic worst-case basis where there is uncertainty, with any assumptions clearly stated.

The spatial and temporal boundaries of the AOI will be refined progressively based on:

- the project design, as it develops
- the development of a preliminary list of VECs and a list of priority VECs based on the results of stakeholder consultation, desk-based assessment and surveys
- identification of sources of cumulative impacts (SCIs) to be included in the CIA for each VEC category
- the results of surveys and assessments undertaken for the ESIA, including air dispersion modelling, offshore sediment modelling, noise modelling, the environmental risk assessment and related modelling of oil spills (onshore and offshore), and ultimately
- the residual impact analysis following application of the mitigation measures, formulated during the ESIA process.

Appendix A includes a preliminary definition of the AOI for each VEC.

6.3 Existing Environmental and Socio-economic Conditions

6.3.1 Introduction

This subsection describes the existing environmental and social baseline conditions for the Tilenga feeder pipeline and EACOP project based on scoping. For each of the identified project VECs, the AOI was established through desktop studies and field visits, allowing relevant data to be collected. Appendix A describes the project VECs and the potential associated effects that inform establishment of the AOI.

Each of the subsections includes:

- a description of the AOI
- existing baseline condition
- scoping baseline data collected.

The existing environmental and social baseline conditions in the subsections provide context for:

- stakeholder concerns, as detailed in Section 4 and Appendix C
- significant residual project impacts discussed in Section 5 and listed in Table 5.5-1 and in Appendix E
- the VEC impacts assessment discussed in Section 7.3
- the planned baseline surveys described in the terms of reference (ToR) (Section 8.4).

6.3.2 Biodiversity

The Tilenga feeder pipeline and the first 50 km of the EACOP project traverse areas of high biodiversity value and include several areas that are recognised internationally for their biodiversity value at the landscape scale. However, the majority of the 391 km of the combined projects' route corridor, including from KP50 to the Uganda–Tanzania border, is within an area of lower biodiversity significance.

The projects' route was selected to avoid the most significant areas of biodiversity (e.g., World Heritage Sites, national parks and Ramsar wetlands). The Uganda Wildlife Authority (UWA) has confirmed that the proposed Tilenga feeder pipeline route corridor is within the Bugungu Wildlife Reserve (also an important bird area (IBA) and key biodiversity area (KBA)). The route is adjacent to the Maseege and Bujawe Forest Reserves and Lake Albert (also a KBA). The EACOP project corridor is within the Taala and Wambabya Forest Reserves, and adjacent to the Kasana-Kasambya, Bugoma (also a KBA), and Lwengo Forest Reserves. Forest Reserves may be designated for harvesting timber, replanting and biodiversity conservation.

Figure 6.3-1 shows maps of biodiversity VECs.

This section includes:

- a description of the biodiversity AOI
- existing baseline biodiversity condition
- scoping baseline data collected.


150000
200000
250000
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10200000
10150000
Parombo
Panyimur
Pakuba
Paraa
Victoria Nile River
Eastern
Afromontane Biodiversity
Hotspot
Wanseko
Tilenga CPF
Murchison Falls
National Park
Sambiye River
Buliisa
Bugaya West
Maseege
Forest
Reserve
DEMOCRATIC
REPUBLIC
OF CONGO
Bugungu
Wildlife
Reserve
Bugungu
Wildlife
Reserve KBA
Eastern
Afromontane Biodiversity
Hotspot
Sonso River
Budongo
Forest
Reserve
Biso
Lake Albert
UGANDA
Masindi
Waki River
Kigorobya
Kitoba
Bujawe
Forest Reserve
Kabaale Hub
Wambabya
Forest
Reserve
Hoima
Wambaby River
Kafu River
Bugoma
Forest
Munteme


150000
200000
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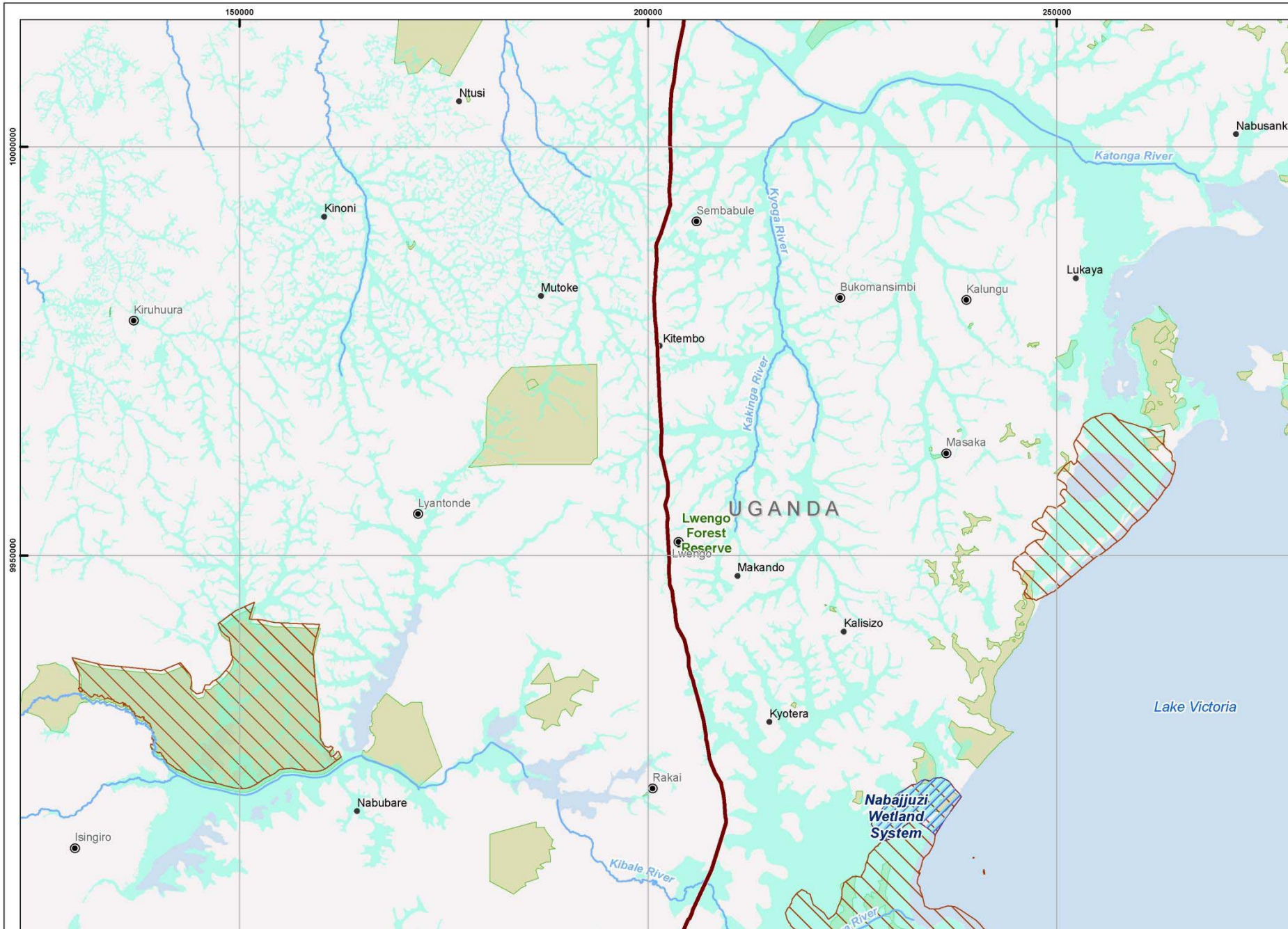
Bugoma Central Forest Reserve KBA
Bugoma Forest Reserve
Kafu River
Mpongo River
Mayanja Kato River
Nakaseke
Kagadi
Nkoko
Ntwetwe
Kiboga
Eastern Afromontane Biodiversity Hotspot
Taala Forest Reserve
Kibaale
Kitoma West
Kakumiro
Nkusi River
Madudu
Bukuya
Bombo
Kalangalo Central
Mubende
Kakabara
Kasana - Kasambya Forest Reserve
UGANDA
Kyegegwa
Kiwumulo
Kasanda
Katabalanga River
Myanzi
Mityana
Nabakazi River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Kinoni
Mutoke
Kiruhuura
Lyantonde
Isingiro
Nabubare
Rakai
Kitembo
Sembabule
Kyoga River
Kakinga River
Katonga River
Bukomansimbi
Kalungu
Lukaya
Masaka
Makando
Kalisizo
Kyotera
UGANDA
Lwengo Forest Reserve
Lwengo
Nabajjuzi Wetland System
Kibale River
Lake Victoria

6.3.2.1 Biodiversity AOI

For legally protected sites, internationally or nationally recognised areas, the AOI encompasses the boundary of the protected or recognised area directly or indirectly affected by the project and its activities arising from, for example, facilitated access, edge effects, spread of invasive species, and temporary and permanent habitat loss and fragmentation. The planning of the route corridor identified a 2-km-wide corridor in which the route of the 100-m-wide corridor is still being refined. As the 100-m route is still being refined, potential impacts for scoping were therefore assumed to be within the 2-km-wide corridor. For the purpose of this scoping report, the AOI for protected or recognised areas was defined by a 2-km-wide corridor for the Tilenga feeder pipeline and the EACOP project.

For flora and fauna species of conservation concern, the AOI encompasses the direct project footprint in addition to areas within an ecologically relevant distance of the project to account for potential indirect impacts arising from, for example, facilitated access, edge effects, spread of invasive species, and permanent habitat loss and fragmentation. The definition of an ecologically relevant distance relies on the mobility of a species, habitat connectivity between it and the project, and the potential impact pathways between it and the project.

In accordance with IFC PS6 guidance on critical habitat, the AOI may also need to be extended to incorporate the entirety of any discrete management units (DMUs – an area with a definable boundary within which the biological communities or management issues have more in common with each other than they do with those in adjacent areas) identified for endangered or critically endangered species; endemic and/or range-restricted species; migratory or congregatory species; or keystone species. For the purpose of this scoping report, the AOI for species of conservation concern was defined by a 10-km wide corridor for the Tilenga feeder pipeline and the EACOP project. Similarly, as explained above for the 2-km-wide corridor for the protected sites and recognised areas, an AOI based on the 10-km-wide route corridor for this VEC to account for the mobility of faunal species.

For terrestrial and aquatic habitats of conservation importance, the AOI will encompass the direct project footprint in addition to potential indirect impacts on these sites arising from (for example, facilitated access, edge effects, spread of invasive species) and permanent habitat loss and fragmentation. The AOI may need to include wetland and riparian habitats downstream of the project that are potentially at risk (e.g., from spills or sedimentation). For the purpose of this scoping report, the AOI for habitats of conservation importance was defined by a 10-km-wide corridor for the Tilenga feeder pipeline and the EACOP project.

6.3.2.2 Existing Baseline Biodiversity Condition

Overview

The projects are located within the Albertine Graben which encompasses much of the western East African Rift Valley, from north of Lake Albert to southern Tanzania. This region is important and unique in terms of biodiversity, and includes several areas that are recognised internationally for biodiversity such as:

- the Eastern Afromontane Biodiversity Hotspot[9] (BirdLife International 2012). This biodiversity hotspot stretches over an arc of widely scattered but biogeographically similar mountains from Zimbabwe to Saudi Arabia, covering an area of over 1 million km^2. Both the Tilenga feeder pipeline and the EACOP project cross this hotspot, which supports over 10,865 species of which approximately 31% are endemic to the hotspot. The rich biological diversity of this hotspot is also reflected by the high level of ecosystem services[10] it provides. The land use impacts on the hotspot are described in the subsequent sections for protected sites and other recognised areas.
- the East Sudanian savanna ecoregion[11] (conservation status: critical to endangered) (WWF 2017a). The entirety of the Tilenga feeder pipeline and the first approximately 3 km of the EACOP project are within this 917,633 km^2 ecoregion, which is characterised by large expanses of acacia woodland. Given the pronounced dry season, there is a large seasonal migration of animals, including many migrant birds on the Afrotropical-Palaearctic flyway. Though significant loss of original wooded savanna habitats has occurred, large areas of relatively intact habitat remain, even outside protected areas. Land use issues in this ecoregion include seasonal shifting cultivation, overgrazing by livestock, logging, burning for charcoal, uncontrolled wild fires, trophy hunting and climate change. In addition, poaching has depleted populations of large mammals and the black rhinoceros, *Diceros bicornis*, that once thrived here, has disappeared.
- the Albertine Rift montane forests ecoregion (conservation status critical/endangered) (WWF 2017b), which the EACOP project traverses between approximately KP3 and KP34. This 104,000 km^2 ecoregion, which partially overlaps with the Eastern Afromontane Biodiversity Hotspot, has been identified by key national and international conservation nongovernmental organisations (NGOs) as a top priority area for biodiversity conservation in Africa. The ecoregion is an area of exceptional faunal endemism[12] and moderate floral endemism, but despite its high biological importance, large areas remain poorly studied. Highland forests have mostly been cleared but some sizable areas of montane forest still exist, including in the Rwenzori Mountains. Legally protected areas within the ecoregion are affected by hunting and poaching. Farming is resulting in habitat fragmentation in many areas and is the main activity affecting biodiversity conservation in the ecoregion.
- the Victoria Basin forest-savanna mosaic ecoregion (conservation status critical/endangered) (WWF 2017c), which the EACOP project traverses from KP34 to the Uganda–Tanzania border. This 165,759 km^2 ecoregion is characterised by rolling hills and plateaus, forming a unique landscape where species characteristic of the west African forest ecosystem meet the east African forest-savanna mosaic. Lakes, rivers and marshes add to the diversity

[9] The Critical Ecosystem Partnership Fund (CEPF) has identified 36 biodiversity hotspots globally, which support especially high numbers of endemic species. All hotspots contain at least one Global 200 Ecoregion (see Footnote 3).

[10] Ecosystem services are benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

[11] The World Wildlife Fund has derived a system called the 'Global 200 Ecoregions' to select priority ecoregions for conservation based on species richness, endemism, taxonomic uniqueness, unusual ecological or evolutionary phenomena and global rarity.

[12] The ecological state of being unique to a particular geographic location, such as a specific island, habitat type, nation or other defined zone

of habitats supporting a wide variety of species. Animals such as banded toads, red-faced barbets and Mwanza rock agamas are among the many endemic species that can be found here (Global Species 2017). This ecoregion is currently affected by cultivation, overgrazing, overharvesting of trees for firewood and charcoal, and poaching.

Several smaller areas also internationally recognised for their biodiversity value are in, and possibly overlap with, these large internationally recognised areas:

- Key biodiversity areas (KBAs)[13] are sites that contribute to the global persistence of biodiversity, qualifying using 11 criteria across 5 categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and irreplaceability. KBAs include areas identified as important bird areas and important biodiversity areas, as well as Alliance for Zero Extinction (AZE) sites identified by biodiversity conservation organisations as the last remaining sites for species classified as endangered or critically endangered by the IUCN. The Tilenga feeder pipeline is immediately adjacent to the Bugungu Wildlife Reserve and the Lake Albert KBAs and the southern boundary of the 2-km EACOP pipeline corridor is within 300 m of the Bugoma Forest Reserve KBA.

Outside these recognised areas, the Northern Albertine Rift of Uganda covers the area between Murchison Falls National Park to the north and the Toro-Semliki Wildlife Reserve to the south, encompassing the entire Tilenga feeder pipeline and the first approximately 50 km of the EACOP project. This area supports the largest remaining forests in Uganda. However, it is also experiencing the highest rate of forest loss, with around 8000 hectares (ha) lost per year (MWE, 2012). With much of the area's forests being on private land, a priority for the government's strategic planning process has been identifying forest and woodland savannah connections (corridors) through the landscape to retain migration routes and support gene flow among populations of vulnerable species.

The AOI also includes several legally protected sites such as national parks, wildlife reserves and forest reserves. These are discussed in more detail below.

Legally Protected Sites

The Tilenga feeder pipeline and EACOP project routes have been selected to avoid the most sensitive biodiversity sites, such as national parks and Ramsar wetlands, see Section 2.2.3, Route and Site Identification. However, in the case of the Tilenga feeder pipeline, the starting point and delivery point are defined, which restricts the routing opportunity. In addition, because of the length of the pipelines, the route corridors traverse, or are within, 2 km of the legally protected sites described below (also see Figure 6.3-1).

[13] The KBA partnership includes BirdLife International, the International Union for Conservation of Nature, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Global Wildlife Conservation, NatureServe, Royal Society for the Protection of Birds, World Wide Fund for Nature and Wildlife Conservation Society. BirdLife International manages the World Database of KBAs on behalf of the KBA partnership. Anyone with appropriate supporting scientific data can nominate a KBA, but stakeholder consultation and extensive peer review is required before a nominated site is adopted (see http://www.keybiodiversityareas.org/home for more information).

Maseege Forest Reserve

The Tilenga feeder pipeline is within 200 m of Maseege Forest Reserve between approximately KP15 and KP16.5. Although somewhat degraded owing to encroachment of agriculture (Figure 6.3-2), this forest reserve is part of a wildlife movement corridor between Lake Albert and Murchison Falls National Park and is therefore valuable for wildlife connectivity.



Figure 6.3-2 Maseege Forest Reserve Adjacent to the Hoima-Bukumi Road

Bugungu Wildlife Reserve

The Tilenga feeder pipeline route corridor is within the Bugungu Wildlife Reserve between KP27 and KP39. This site is also designated as an IBA and a KBA.[14] Bungungu Wildlife Reserve is maintained for wildlife and tourism, managed by the UWA, and classified as IUCN category III site (natural monument of feature). This reserve encompasses an area of 520 km^2. The escarpment of the Albertine Rift crosses in a southwest to northeast direction through the reserve (Figure 6.3-3) and divides it into two distinct sections that differ in terms of their dominant vegetation. The top of the escarpment supports dense, closed canopy woodland interspersed with tall grassland, while the valley floor supports more open savannah woodland and grassland.

[14] As well as being designated an IBA and KBA, Bugungu Wildlife Reserve forms part of the broader Murchison Falls Protected Area, which comprises Murchison Falls National Park, Karuma Wildlife Reserve and Bugungu Wildlife Reserve.



Figure 6.3-3 Albertine Rift Escarpment within Bugungu Wildlife Reserve

The UWA General Management Plan has defined a collection of designated sites, including the Bugungu Wildlife Reserve, as the Murchison Falls Protected Area (MFPA) ensuring the coordinated management of the sites.

The MFPA includes several management zones. The wilderness and resource use zones are within the Tilenga feeder pipeline AOI (Figure 6.3-4). The wilderness zone is representative of the natural area of the MFPA, comprising dense bushland and thicket with low wildlife numbers.

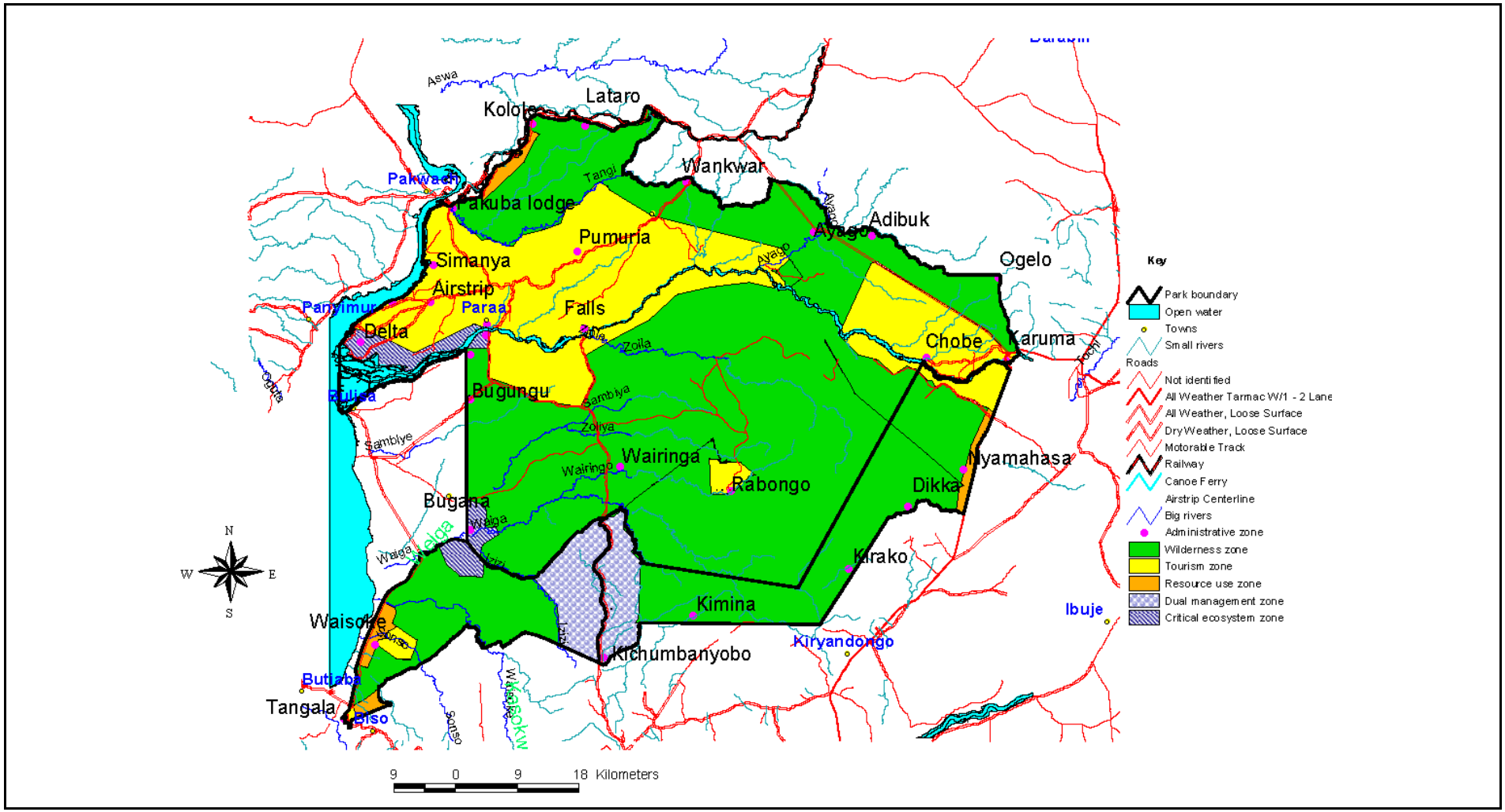


Figure 6.3-4 Management Zones of MFPA within the Tilenga Feeder Pipeline AOI

SOURCE: UWA (2013)

Despite intensive poaching, Bugungu Wildlife Reserve supports populations of Uganda kob and buffaloes as well as other large mammal species including waterbuck, warthog and baboon (Figure 6.3-5).



Figure 6.3-5 Baboon in Bungungu Wildlife Reserve

Over the last five years, cattle grazing has led to marked degradation in some areas of Bugungu Wildlife Reserve, particularly along the Buliisa–Biiso road. At the time of writing (July 2017), wildlife from the reserve move through farmland adjacent to the reserve to access Lake Albert, creating human–wildlife conflict (UWA 2013).

Ongoing surveys for both the Tilenga feeder pipeline and EACOP project ESIA will provide additional information on the status of animal populations and habitats within Bugungu Wildlife Reserve.

Bujawe Forest Reserve

The Tilenga feeder pipeline will be outside, but within 500 m of the Bujawe Forest Reserve between approximately KP74 and KP87. The reserve comprises pine and eucalypt plantations but is used mostly for subsistence farming (Figure 6.3-6).



Figure 6.3-6 Bujawe Forest Reserve

Wambabya Forest Reserve

Between KP5 and KP9, the EACOP project is within 100 m of the Wambabya Forest Reserve. The southern part of the reserve supports relatively intact forest. Although only 3420 ha in size, Wambabya has the highest population density of chimpanzees in the Albertine Rift (Lamprey 2015).

Bugoma Forest Reserve

The EACOP project is approximately 3.7 km north of the Bugoma Forest Reserve. This site is also designated as the Bugoma Central Forest Reserve KBA. The boundary of the KBA is larger than that of the forest reserve and is approximately 300 m south of the EACOP project. Bugoma Forest Reserve and KBA provide habitat to a range of forest-dependent and biome-restricted species, including two globally threatened bird species (Nahan's francolin and grey parrot). Surveys for Nahan's francolin in Uganda suggest that Bugoma Forest Reserve contains the highest density of the species nationally and the population in the reserve appears crucial to the long-term survival of the species (Fuller et al. 2004). In addition to birds, Bugoma Forest Reserve is important for other biodiversity, supporting 38 species of mammals (of which four are globally threatened) and 257 species of trees and shrubs (of which seven are Albertine Rift endemics and 12 globally threatened) (BirdLife International 2017). A portion of the reserve was being

deforested for the development of a sugar cane plantation but it is understood that the government halted this.

Taala Forest Reserve

The EACOP project traverses the western part of the Taala Forest Reserve from KP78.5 to KP82.5. The project is immediately adjacent to a village enclave and the existing land use is mostly agriculture (Figure 6.3-7), with some eucalypt plantations to the north.



Figure 6.3-7 Taala Forest Reserve

Kasana-Kasambya Forest Reserve

The EACOP project 2-km-wide corridor traverses a short section of the Kasana-Kasambya Forest Reserve near KP123. This part of the reserve is exclusively pine tree plantations that are commercially harvested (Figure 6.3-8).



Figure 6.3-8 Kasana-Kasambya Forest Reserve

Lwengo Forest Reserve

The EACOP project 2-km-wide corridor traverses a small part of the Lwengo Forest Reserve at approximately KP232. This small (0.21 km^2) reserve comprises mostly eucalypt trees, and subsistence-level farming is encroaching (Figure 6.3-9).



Figure 6.3-9 Lwengo Forest Reserve

Natural Habitats and Land Use

Natural habitat (in accordance with the IFC PS6 definition) occurs outside protected areas, notably *Papyrus* and *Carex* dominated wetlands around rivers and the Lake

Albert shore and grassland and scrubland along the escarpment above Lake Albert and southwest of Bugungu Wildlife Reserve.

Elsewhere along the pipeline routes, habitats are degraded, with high levels of anthropogenic influence (cultivation, grazing and charcoal production). Despite this, the pipeline routes are known to, or likely to, support a large number of species of conservation concern, some of which could trigger critical habitat under IFC PS6.

Land use within the AOI of the Tilenga feeder pipeline and that of the EACOP project is primarily cultivation, followed by grazing cattle. Nevertheless, the first 20 km of the EACOP project traverse areas mapped as having medium, high and very high species richness (MEMD 2013).

Threatened Species and Conservation Initiatives

Many biodiversity studies have been conducted over many years in this part of Uganda. This has contributed to the current state of knowledge and resulted in the development of a Uganda Red List of nationally threatened species (2016).

In addition to the Uganda Red List, the following studies were reviewed during the scoping phase to identify the presence of threatened species in the project AOI:

- the Strategic Plan for the Northern Albertine Rift of Uganda, 2011–2020 (MWE 2012), which identifies key species (chimpanzee, forest raptors, shoebills, crocodiles, elephants, giraffes, lions and valuable timber species under threat such as mahogany) and ecological processes (such as connectivity, migration, pollination and seed dispersal) as priority ecological components for monitoring. The target species are those most reliant on the maintenance of large areas of forest cover and large areas of undisturbed wetlands, and key savannah species that are largely restricted to protected areas. The target processes reflect ecosystem functions that are at risk from habitat fragmentation and potentially by climate change.
- the Conservation Action Plan for the Albertine Rift (Plumptre et al. 2016), which divides the Rift into six key landscapes that are important for conservation. The entirety of the Tilenga feeder pipeline 2-km corridor and the first approximately 50 km of the EACOP project 2-km corridor traverses the Murchison-Semliki landscape, which extends from MFNP in the north to the eastern shores of Lake Albert to the Semliki Wildlife Reserve in the south. The Murchison-Semliki landscape, because of extensive deforestation, is one of the most impacted areas in the Albertine Rift (Plumptre et al. 2016). Priority forest corridors have been identified in this landscape to preserve the connectivity between the main forest areas, and conservation actions need to focus on preserving these corridors (McLennan 2008; McLennan and Plumptre 2012; Lamprey, R. 2015).
- Biodiversity studies undertaken for the Tilenga Project have included the length of the Tilenga feeder pipeline and the first approximately 50 km of the EACOP project (WCS and eCountability 2016).

Figure 6.3-1 identifies important habitats in the AOI of the EACOP project, such as wetlands and known fauna movement corridors. Additional areas will be identified during the baseline biodiversity surveys as part of the ESIA.

The Local Ecological Footprint Tool (University of Oxford 2016) (see Section 6.3.2.3) was used to identify areas of greatest ecological risk from development and is within the Tilenga feeder pipeline and EACOP project AOIs. The threatened

species (IUCN CR, EN or VU) listed in Table 6.3-1 were identified as being likely to occur within the pipeline AOIs. The table also lists the status of the species in Uganda.

Table 6.3-1 Threatened Species Likely to Occur within the Projects' AOI

Species Group	Species	Common Name	Status
Amphibians	*Hyperolius frontalis*	Bushoho reed frog	IUCN LC, EN Uganda
	Phrynobatrachus versicolor	Rwanda river frog	IUCN VU, EN Uganda
Birds	*Acrocephalus griseldis*	Basra reed-warbler	IUCN EN
	Ardeola idae	Madagascar pond-heron	IUCN EN, EN Uganda
	Balaeniceps rex	Shoebill	IUCN VU, EN Uganda
	Balearica regulorum	Grey-crowned crane	IUCN EN, EN Uganda
	Bradypterus graueri	Grauer's swamp-warbler	IUCN EN, VU Uganda
	Bucorvus cafer	Southern ground-hornbill	IUCN VU
	Chlorocichla prigoginei	Prigogine's greenbul	IUCN EN
	Chloropeta gracilirostris	Papyrus yellow warbler	VU Uganda
	Cryptospiza shelleyi	Shelley's crimson-wing	IUCN VU, EN Uganda
	Falco naumanni	Lesser kestrel	IUCN LC, VU Uganda
	Francolinus nahani	Nahan's partridge	IUCN EN
	Glareola ocularis	Madagascar pranticole	IUCN VU
	Grus carunculatus	Wattled crane	IUCN VU
	Hirundo atrocaerulea	Blue swallow	IUCN VU, EN Uganda
	Muscicapa lendu	Chaplin's flycatcher	IUCN VU, EN Uganda
	Ploceus flavipes	Yellow-legged weaver	IUCN VU
	Torgos tracheliotos	Lappet-faced vulture	IUCN EN, CR Uganda
	Trigonoceps occipitalis	White-headed vulture	CR Uganda
Mammals	*Hybomys lunaris*	Ruwenzori striped mouse	IUCN VU, VU Uganda
	Cercopithecus lhoesti	L'Hoest's monkey	IUCN VU
	Crocidura tarella	Ugandan shrew	IUCN EN
	Dasymys montanus	Montane shaggy rat	IUCN EN, EN Uganda
	Delanymys brooksi	Delany's swamp mouse	IUCN VU, CR Uganda
	Diceros bicornis	Black rhinoceros	IUCN CR, RE Uganda
	Hippopotamus amphibius	Hippopotamus	IUCN VU, VU Uganda
	Loxodonta africana	African elephant	IUCN VU, CR Uganda
	Lycaon pictus	African wild dog	IUCN EN, CR Uganda
	Myosorex blarina	Montane mouse shrew	IUCN EN, EN Uganda
	Pan troglodytes	Chimpanzee	IUCN EN, EN Uganda
	Panthera leo	Lion	IUCN VU, CR Uganda
	Rhinolophus ruwenzorii	Ruwenzori horseshoe bat	IUCN VU
	Ruwenzorisorex suncoides	Ruwenzori shrew	IUCN VU,VU Uganda
	Sylvisorex lunaris	Moon forest shrew	IUCN VU, VU Uganda
	Thamnomys venustus	Charming thicket rat	IUCN VU

NOTES: IUCN – International Union for Conservation of Nature, VU – vulnerable, EN – endangered, CR – critically Endangered

According to other desktop information sources referenced herein, particular species of note within the projects' AOI include birds such as the grey crowned crane (Uganda's national bird; IUCN EN) and papyrus gonolek (Uganda VU); primates such as chimpanzee (IUCN and Uganda EN) and Ashy red colobus (IUCN and Uganda EN); aquatic mammals such as hippopotamus (IUCN and Uganda VU) and African spot-necked otter (Uganda EN); terrestrial mammals such as spotted hyena (IUCN and Uganda CR) and Ugandan lowland shrew (IUCN and Uganda EN); many endemic freshwater fish; and close to 1000 species of endemic plants.

In addition, many migratory species have migration routes that cross the Tilenga feeder pipeline and EACOP project AOIs, including but not limited to the African black swift (*Apus barbatus*), black-tailed godwit (*Limosa limosa*), steppe eagle (*Aquila nipalensis*), great crested grebe (*Podiceps cristatus*) and olive bee-eater (*Merops superciliosus*).

A review of secondary data sources has identified active chimpanzee populations within the AOI of the Tilenga feeder pipeline and the first part of the EACOP project. There is a well-studied population (approximately 639 individuals) of chimpanzees using Budongo Forest Reserve. Census work during 1999–2003 also recorded chimpanzees in Wambabya Forest Reserve (approximately 136 individuals) and Bugoma Central Forest Reserve (approximately 627 individuals), with another predicted 68 individuals in low-density sites between Bugoma and Budongo. In addition, the area between the Wambabya and Bugoma forest reserves provides perhaps the best opportunity for a viable ecological reconnection of the chain of forests in the northern Albertine Rift (Lamprey 2015). Several narrow riparian corridors and small patches of remnant forest vegetation link the Wambabya and Bugoma forest reserves. Although degraded, studies demonstrate that these are valuable in terms of wildlife connectivity, particularly for chimpanzees.

6.3.2.3 Scoping Baseline Data Collected

During scoping, the baseline data collection for biodiversity included a review of the following desktop resources:

- high-resolution satellite imagery over a 25-km-wide corridor
- recently acquired (2017) light detection and ranging (LIDAR) data for a 2-km-wide corridor centred on the preliminary pipeline route
- online biodiversity data sources including but not limited to:
  - information available via the Proteus Partners[15]; available tools include the Integrated Biodiversity Tool for Business (IBAT), Biodiversity A to Z and Protected Planet
  - World Wildlife Fund Global Ecoregions and the Nature Conservancy Ecoregional Assessments
  - Critical Ecosystem Partnership Fund Biodiversity Hotspots
  - Ramsar wetlands
  - Wetlands International's Critical Site Network Tool
  - World Network for Biosphere Reserves

[15] Proteus is a forum of leading extractives companies who collaborate with UNEP's specialist biodiversity assessment arm, UNEP-World Conservation Monitoring Centre. See http://www.proteuspartners.org/

  - IUCN Red List of Ecosystems
  - Global Biodiversity Information Facility
- relevant peer-reviewed and grey literature on biodiversity values in the project AOI
- baseline biodiversity studies and other documents developed for other projects in the AOI
- records for any rare, endemic or threatened species in the AOI, for example, known populations of national red data book or IUCN Red List species
- national conservation priorities as outlined in the Ugandan National Biodiversity Strategy and Action Plan II (2015–2025), and the Strategic Plan for the Northern Albertine Rift of Uganda 2011–2020
- citations and site description sheets for protected areas where these were readily available.
- the Local Ecological Footprint Tool (LEFT), a web-based tool developed by the University of Oxford. The tool processes publicly available environmental datasets and uses standard published algorithms to produce maps at 30-m resolution of land cover classes, numbers of globally threatened terrestrial vertebrate and plant species, biodiversity of terrestrial vertebrates and plants, habitat intactness, wetland habitat connectivity, numbers of migratory species, and vegetation resilience. These results are aggregated to produce a single map of relative ecological value. Two LEFT search areas, one for the Tilenga feeder pipeline and one for the EACOP project, were defined as part of the scoping phase baseline data collection.

In addition, stakeholder consultations at a national level with NEMA and at a local level with, for example, wildlife officers and local communities were held as well as initial consultation with relevant experts including science-based NGOs, academic and research institutions and individual experts. The project biodiversity lead visited locations of specific interest along the proposed Tilenga feeder pipeline and EACOP project with the project engineers ESIA project manager and social team as part of the scoping study. This initial field visit provided an opportunity to ground-truth some of the data collected and identify areas where further baseline survey is needed.

6.3.3 Physical Environment

6.3.3.1 Geology

The Tilenga feeder pipeline and EACOP project initially traverse sedimentary rock (Phanerozoic alluvium and rift sediments) followed by Precambrian gneiss and granite complexes up to the Uganda–Tanzania border (Geological Survey of Uganda 1961; Schlüter 2006).

Geology AOI

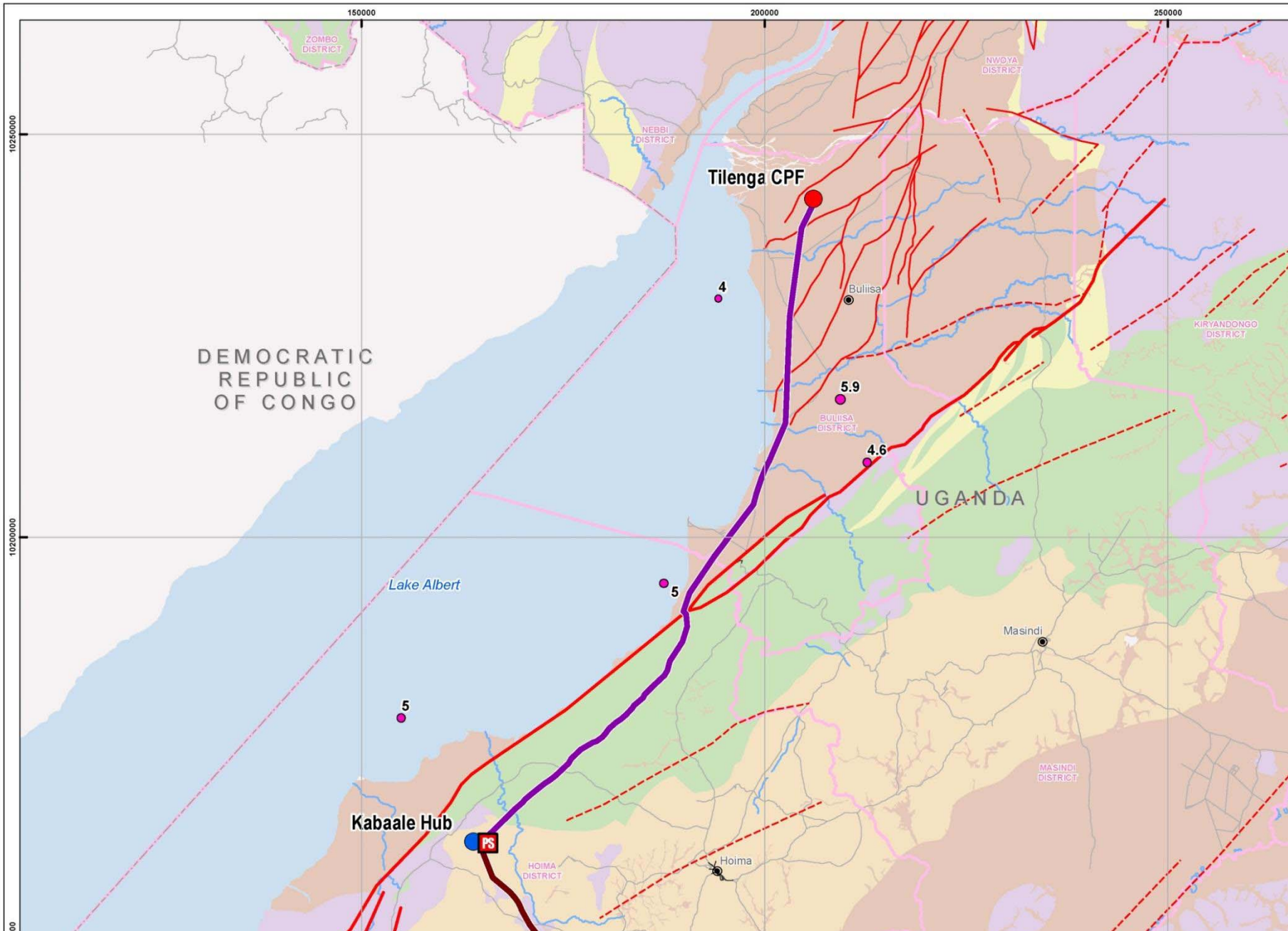
Although geology is not a project VEC, an understanding of the geology AOI provides important context for some VECs (e.g., groundwater, soils). The geology AOI will encompass the project footprint defined by:

- the pipeline RoW
- AGI locations

- construction camps and construction facilities
- access roads.

Existing Geology Baseline Conditions

In Uganda, ancient (Precambrian) crystalline rock, including gneiss and granites, constitute around 90% of the land area dominating the geology. The remaining rock types are mostly younger volcanic and sedimentary rocks. Regolith, which covers the crystalline rock, is a layer of weathered material that varies from rock fragments near the bedrock interface to well-weathered soil and hardened laterite at the surface. This regolith layer varies in thickness, but is on average approximately 30 m thick (BGS, 2001). Figure 6.3–10 presents the general geology in association with the Tilenga feeder pipeline route and Figure 6.3–11 presents the general geology in association with the EACOP project route.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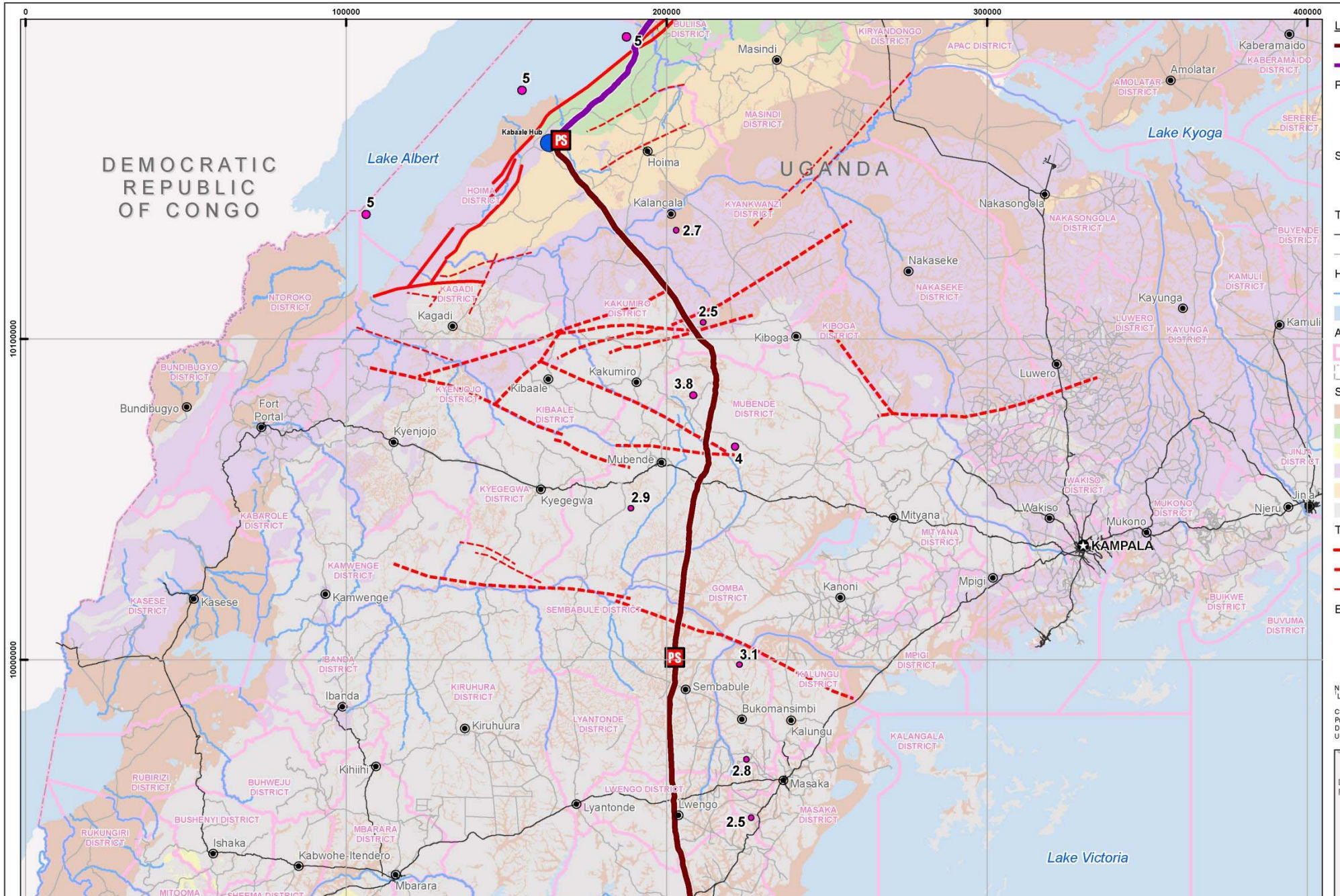
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Kamuli
Kiboga
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Kagadi
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Bundibugyo
Fort Portal
Kyenjojo
Mubende
Kyegegwa
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Wakiso
Mukono
KAMPALA
Njeru
Jinja
Kamwenge
Kasese
Kanoni
Mpigi
Sembabule
Ibanda
Kiruhuura
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Seismicity and Earthquakes

Earthquake occurrence in Uganda is associated with the East African Rift System (EARS) (UNESCO 2013). Uganda lies between two parts of the EARS: an eastern and a more seismically active western branch. The western branch mostly overlaps the border with the Democratic Republic of the Congo and the eastern branch is a few hundred kilometres to the eastern from the border with Kenya. Other tectonic features that have influence earthquake occurrences in Uganda include the:

- Rwenzori Mountains: Tectonic movements cause stress accumulation that is released along the border and boundary faults of the mountains. The faults include Nyamwamba, Kicwamba, Bwamba, Kitimbi-Semuliki, Ruimi-wasa and Bunyoro–Toro.
- Katonga Fault: This fault starts in the foothills of the Ruwenzori Mountains, traverses Lake Victoria and connects to Kavirondo Gulf in western Kenya and Speke Gulf south of Lake Victoria in Tanzania.
- Aswar Shear Zone: The shear zone is observed in Uganda from Nimule at the Uganda–Sudan border and joins Mount Elgon on the eastern border with Kenya.

The tectonic setting described above makes Uganda earthquake prone, and the tectonic movements of geological structures have been responsible for major earthquakes in Uganda:

- on 2 October 1929, an earthquake in the Toro region of western Uganda, measuring 5.9 on the Richter scale and triggering landslides
- on 18 March 1945, an earthquake in the Sembabule-Masaka region measuring 6.0 on the Richter scale, killing five people and destroying buildings in Masaka Town
- on 20 March 1966, an earthquake in the Toro region in western Uganda, measuring 6.6 on the Richter scale, killing 150 and injuring 1300 people, and causing economic losses estimated at US$ 1 million
- on 7 September 1990, an earthquake in the Lake Victoria region (epicentre at Nakiwogo on the lakeshore), measuring 5.0 on the Richter scale and destroying semi-permanent buildings around the Nakiwogo landing site
- on 9 October 1991, an earthquake in the Lake Albert area (epicentre around Butiaba), measuring 5.3 on the Richter scale and destroying semi-permanent buildings in and around Butiaba
- on 5 February 1994, an earthquake in Kisomoro (Kabarole District), measuring 6.2 on the Richter scale, killing 8 people and destroying property estimated at US$ 61 million
- on 10 September 2016, an earthquake centred at Bukoba, Tanzania measuring 5.9 on the Richter scale and being felt in Uganda.

For the Tilenga feeder pipeline, Figure 6.3–10 shows two secondary major faults and one major fault of east–west orientation. For the EACOP project, Figure 6.3–11 shows the presence of five minor faults and one major fault of east–west orientation.

Landslides and Sinkholes

Desktop research indicates that there is no documented occurrence of landslides and sinkholes along the pipeline route in Uganda.

Mining and Quarrying

Desktop research indicates that mining operations are outside the projects' routes, but there is the potential for this activity to move into the area 2 km from the projects'.

Scoping Baseline Data Collected

During scoping, the baseline data collection for geology included a review of the following desktop resources:

- Explanation of the Geology of Sheet 59 (Kiboga), Report No. 7 (Geological Survey of Uganda 1961)
- Geological Atlas of Africa (Schlüter 2006)
- Geological Survey of Uganda geological maps for the pipeline route and a general description of the formations.

6.3.3.2 Surface Water

The Tilenga feeder pipeline route crosses several minor permanent and ephemeral[16] watercourses, all of which flow into Lake Albert.

The Ugandan section of the EACOP project begins in the Lake Albert basin, crosses part of the Victoria Nile basin and continues south into the Lake Victoria basin, crossing several major and minor permanent and ephemeral watercourses and wetlands.

Surface Water AOI

The surface water AOI during the project construction phase will encompass the projects' footprint defined by:

- the pipeline RoW
- access roads at or near watercourse crossings
- all surface water features near AGIs and temporary project facilities.

The AOI also includes downstream waterbodies potentially at risk from project activities (e.g., spillage, water flow diversions), taking into consideration the potential for attenuation by dilution and natural degradation.

The surface water AOI during the operational phase will include all waterbodies and associated watersheds potentially affected by the project, including during abnormal and accidental events.

Existing Surface Water Baseline Conditions

Permanent watercourses crossed by the Tilenga feeder pipeline include the Waiga, Waisoke, Sonso, Waki and Wambabya rivers and ephemeral watercourses include

[16]The term 'ephemeral' is used herein to cover those watercourses with seasonal flow and those with flow just following rain.

the Sambiye River, see Figure 6.3–12. Flow occurs mainly during the wet season between March and November, with flow rate varying between short-lived torrential rainfall flood flows and low flow during dry periods. In the dry season between December and February, total flow and flow variability reduces significantly in permanent watercourses. Flow can cease altogether in ephemeral streams, during both wet and dry seasons.

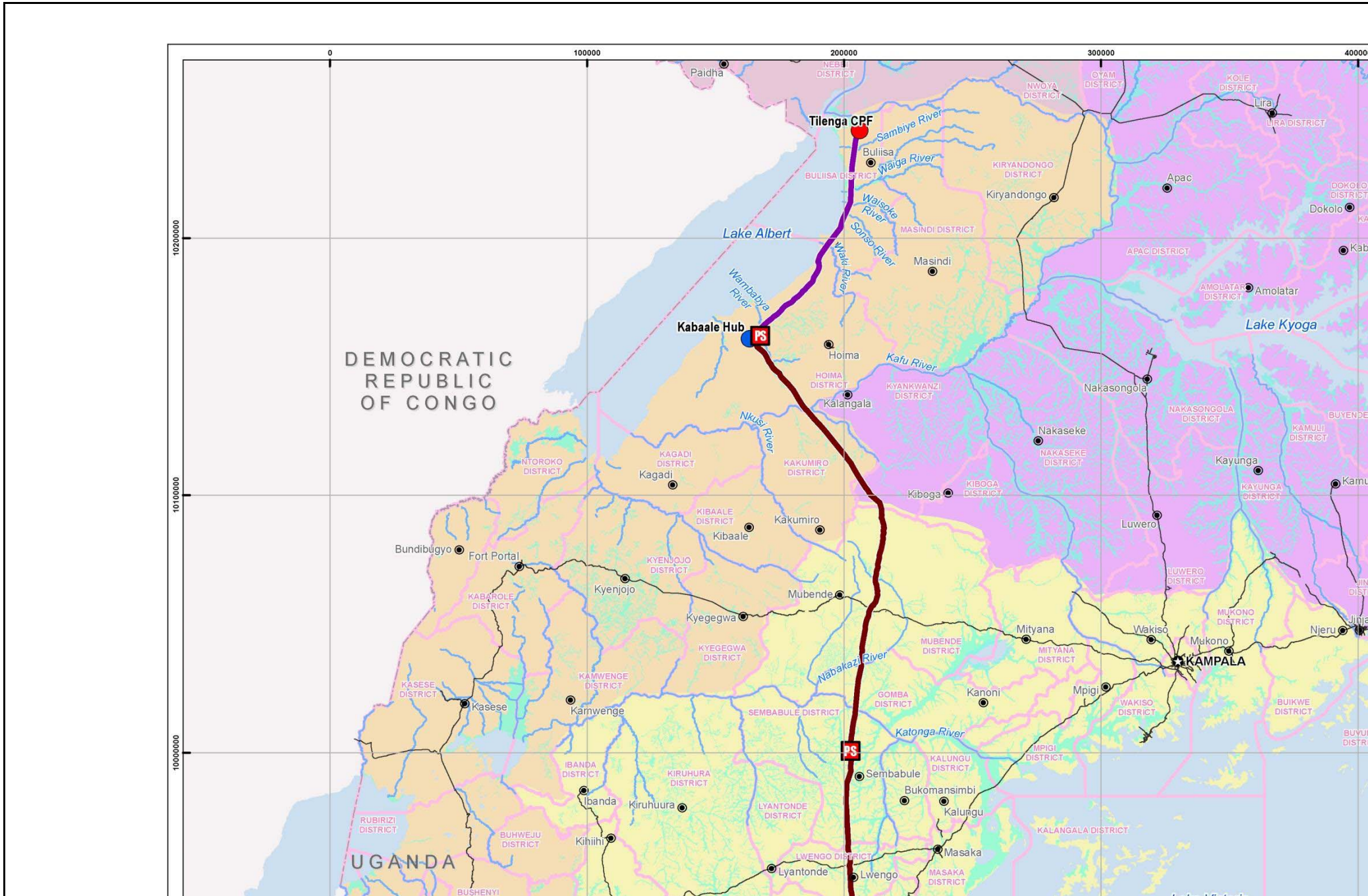
In the Lake Albert basin, the route crosses several tributaries of the Wambabya River and other minor, northward-draining watercourses; see Figure 6.3–12. The route then crosses the Nkusi–Kafu River, which is a channel between Lake Albert and the Victoria Nile that flows in both directions. While the Nkusi River flows into Lake Albert, the Kafu River drains to the Victoria Nile downstream of Lake Kyoga. The channel is choked with wetland vegetation, making it difficult to identify the location where the direction of flow changes from Lake Albert to the Victoria Nile. However, the direction of flow at the pipeline crossing is toward the Victoria Nile (Beadle 1974).

Further south in the Lake Victoria basin, the route crosses the Katonga River and a tributary, the Nabakazi River. The Nabakazi River is obstructed with vegetation at the pipeline crossing point. Downstream of the crossing point with the pipeline, the Nabakazi joins the Katonga River, which flows eastward to Lake Victoria. The Katonga channel connects Lake George and Lake Victoria. This channel is also obstructed with vegetation, again making precise identification of the direction of flow difficult. However, the direction of flow in the Katonga River at the crossing point is toward Lake Victoria.

Toward the border with Tanzania, the route crosses the Kibale River, a permanent river flowing out of Lake Kijanebalola into wetlands fringing Lake Victoria.

Close to the border with Tanzania, the route crosses the Jemakuriya River, a minor permanent stream that flows into the wetlands on the margin of Lake Victoria. During the rainy season, the river floods and could flow into Tanzania. The Jemakuriya River is a therefore a potential transboundary watercourse.

The Kagera River is a major transboundary river, with catchment areas in Uganda, Tanzania, Rwanda and Burundi. The river forms the western part of the border between Uganda and Tanzania then flows south into Tanzania and is crossed by the pipeline in Tanzania. The river then flows northeast, crossing into Uganda, traversing wetlands and finally discharging into Lake Victoria in Uganda.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Mubende
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Mukono
Njeru
KAMPALA
Kanoni
Mpigi
Sembabule
Bukomansimbi
Kalungu
Masaka
Lyantonde
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DEMOCRATIC REPUBLIC OF CONGO
UGANDA
Lake Albert
Lake Kyoga
Sambiye River
Waiga River
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Sonson River
Wake River
Wambabya River
Kafu River
Nkusi River
Nabakazi River
Katonga River
NEBBI DISTRICT
NWOYA DISTRICT
OYAM DISTRICT
KOLE DISTRICT
LIRA DISTRICT
BULIISA DISTRICT
KIRYANDONGO DISTRICT
APAC DISTRICT
DOKOLO DISTRICT
MASINDI DISTRICT
AMOLATAR DISTRICT
HOIMA DISTRICT
KYANKWANZI DISTRICT
NAKASONGOLA DISTRICT
NAKASEKE DISTRICT
KAMULI DISTRICT
KAYUNGA DISTRICT
KIBOGA DISTRICT
LUWERO DISTRICT
NTOROKO DISTRICT
KAGADI DISTRICT
KAKUMIRO DISTRICT
KIBAALE DISTRICT
KYENJOJO DISTRICT
KABAROLE DISTRICT
KYEGEGWA DISTRICT
MUBENDE DISTRICT
MITYANA DISTRICT
MUKONO DISTRICT
WAKISO DISTRICT
BUIKWE DISTRICT
KASESE DISTRICT
KAMWENGE DISTRICT
GOMBA DISTRICT
SEMBABULE DISTRICT
MPIGI DISTRICT
KALUNGU DISTRICT
IBANDA DISTRICT
KIRUHURA DISTRICT
LYANTONDE DISTRICT
KALANGALA DISTRICT
RUBIRIZI DISTRICT
BUHWEJU DISTRICT
LWENGO DISTRICT
MASAKA DISTRICT
BUSHENYI

Water Quality

Surface water quality is likely to be influenced by the substrate on the pathways used by water. Pathways include flow through rock (as groundwater) and soils (as interflow), and surface runoff. Pathways control the time available for water to dissolve and transport solutes and potential contaminants. In settled and cultivated areas, water quality is likely to be affected by agricultural activities and settlements upstream. Concentrations of agricultural contaminants such as organic matter, nutrients, pesticides and substances from settlements such as organic matter, metals and hydrocarbons may temporarily increase during and after flood events. Surface water quality varies with flow. Suspended sediment concentrations and turbidity typically increase significantly during high flows because of erosion of soils and the beds and banks of watercourses. Dissolved solids may increase during periods of low flow and decrease with increasing flow because of dilution effects. In addition, there is a natural tendency for the position of river channels to change laterally because of erosion of their banks on the outside of bends and deposition of sediment on the inside of bends during periods of high flow.

Water Use

Permanent and ephemeral watercourses are used regularly for watering of livestock and by people for domestic purposes, including drinking water. Smallholders often use watercourses to irrigate their crops. Watercourses also recharge shallow, local aquifers that are used by communities for domestic and drinking water supplies.

Scoping Baseline Data Collected

During scoping, the baseline data collection for surface water included a review of the following desktop resources:

- a flood study of southwestern Uganda (DWRM 2010).
- water chemistry data from sampling in August 2010 (wet season) of the perennial Waiga, Waisoke and Sonso rivers and a tributary of the Wambaby River (Schlumberger Water Services 2010)
- a national water resources assessment report (MWE–DWRM 2013)
- an atlas of environmental sensitivity for the Albertine Graben (NEMA 2009)
- an environmental monitoring plan for the Albertine Graben 2012–2017 (NEMA 2012)
- water balance studies of Lake Albert (JDIH Envireau 2009; Atkins 2010)
- a pre-feasibility engineering study of water supply from Lake Albert for injection purposes (Atkins 2010)
- a review of data and extreme values measured on Lake Albert and meteorological data measured at the Tullow Camp and National Lake Research Institute on the lakeshore, April 2007 to June 2009 (ZLH 2009)
- the EA-1/EA-1A & EA-2 North Project – Environmental and Social Impact Assessment (ESIA) Scoping Report and Terms of Reference (AECOM and Eco & Partner Consult 2015) (EA-1 is now known as Contract Area 1, CA-1; EA-2 is now Licence Area 2, LA-2; and EA-1A remains the same)

- a study on natural hazards vulnerability and risk profiles in hot-spot areas as a support to early warning, disaster preparedness and risk reduction measures in Uganda (Goretti, 2013).

6.3.3.3 Groundwater

In the areas where the projects' traverse groundwater occurs in:

- Precambrian basement rock, which underlies most of Uganda
- Tertiary-Quaternary sediments in the Rift Valley system in western Uganda
- river and alluvial sediments along valley floors.

Groundwater is known to maintain baseflow to rivers, lakes and wetlands in several areas.

Groundwater AOI

The groundwater AOI during the project construction and operational phase will encompass, within the project footprint, the aquifers planned for water abstraction and locations where potential sources of spills and leaks of fuel and chemicals can affect groundwater.

The groundwater AOI during the operational phase will include all groundwater used by the project or having the potential to be affected by the project.

Existing Baseline Groundwater Conditions

Groundwater quality is generally good, although high concentrations of iron and manganese are common in the crystalline basement aquifers, and microbial contamination related to faecal waste has been observed in shallow urban aquifers (GWMATE, 2011).

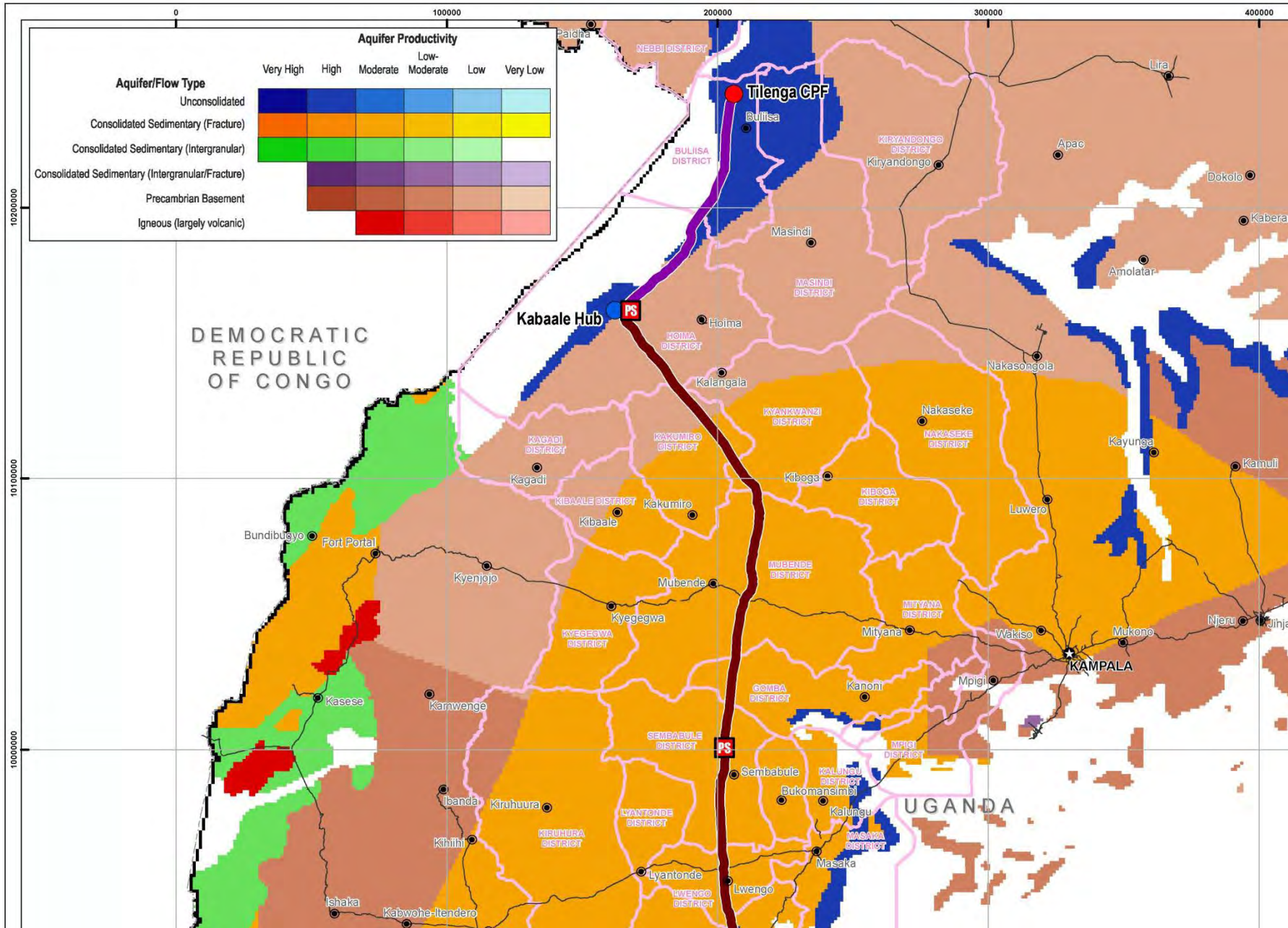
The Tilenga feeder pipeline and EACOP project routes traverse areas that are characterised by unconsolidated fluvial, sedimentary and basement aquifers, which are further described below. Figure 6.3–13 shows a map of aquifer types and their associated productivity.

Unconsolidated Fluvial Aquifers

Unconsolidated aquifers are typically Quaternary or Tertiary in age and are generally found along existing river channels or palaeochannels in which fluvial and alluvial gravel, sand and silt have been deposited.

Yields of more than 50 m^3/hour are possible in the unconsolidated fluvial aquifers. Hydraulic conductivity typically varies between 0.02 and 15 m/day, and average transmissivity is 34 m^2/day.

Unconsolidated aquifers in Uganda are generally unconfined or semiconfined (leaky). They can be greater than 50 m thick where there are significant palaeochannel deposits. Water table depths are highly variable and may be up to 20 m below the ground surface. Borehole depths are also variable, but may be up to 60 m when drilled into palaeochannels (BGS 2017).


Aquifer Productivity
Aquifer/Flow Type
Very High
High
Moderate
Low-Moderate
Low
Very Low
Unconsolidated
Consolidated Sedimentary (Fracture)
Consolidated Sedimentary (Intergranular)
Consolidated Sedimentary (Intergranular/Fracture)
Precambrian Basement
Igneous (largely volcanic)
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DEMOCRATIC REPUBLIC OF CONGO
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MPIGI DISTRICT
SEMBABULE DISTRICT
KALUNGU DISTRICT
LYANTONDE DISTRICT
KIRUHURA DISTRICT
MASAKA DISTRICT
LWENGO DISTRICT

Sedimentary Aquifers

Sedimentary aquifers provide significant yields and connectivity to surface waterbodies. These include, for example, the Precambrian-age Buwekula Sandstones in Mubende District. These are medium-to fine-grained quartzitic sandstones, occasionally with minor lenses of gritstone and conglomerate.

Data on the hydraulic conductivity and transmissivity of these aquifers are not yet available for inclusion in this scoping report but will be acquired for the ESIA.

Basement (Bedrock) Aquifers

The basement complex generally forms discrete aquifers of limited spatial extent. They occur in the unconsolidated weathered regolith (saprolite) or underlying fissured bedrock (saprock). The bedrock permeability is greatest close to the saprock–saprolite interface and decreases with depth. The number, distribution and connectivity of fissures and fractures control it. The permeability of the saprolite is highly variable, but is an important source of groundwater storage.

Yields in the basement complex vary between 0.5 and 12 m^3/hour, with higher yields generally found in the fissured granites and gneiss.

The bedrock aquifer has an average transmissivity of 14 m^2/day and an average storage coefficient[17] of 0.014, although it can be as low as 10^{-4}. The transmissivity of the weathered zone typically ranges from 0.1 to 20 m^2/day, with an average of 16 m^2/day.

The basement aquifers are generally semiconfined or leaky. The depth of the water table can range from 1 to 45 m, but is typically 5–20 m below the ground surface. The aquifers are typically between 20 and 45 m thick and boreholes are generally drilled to depths of 45–70 m (BGS, 2017).

Scoping Baseline Data Collected

During scoping, the baseline data collection for groundwater included a review of the following desktop resources:

- hydrocensus borehole data from the Directorate of Water Resources Management (DWRM) in Entebbe
- Managing Groundwater Development in Uganda (Groundwater Management Advisory Team 2011)
- Explanation of the Geology of Sheet 59 (Kiboga), Report No. 7 (Johnson 1961)
- *Geological Atlas of Africa* (Schlüter 2006)
- Hoima District data (Ministry of Water and Environment 2010)
- Groundwater quality in rural Uganda: hydrochemical considerations for the development of aquifers within the basement complex of Africa (Taylor and Howard 1994)
- A tectonic geomorphic model of the hydrogeology of deeply weathered crystalline rock: evidence from Uganda (Taylor and Howard 2000)
- an atlas of environmental sensitivity for the Albertine Graben (NEMA 2009)

[17]The storage coefficient is the amount of water that a portion of an aquifer releases from storage, per unit mass or volume of aquifer, under a decrease in the hydraulic pressure in the aquifer.

- an environmental monitoring plan for the Albertine Graben 2012–2017 (NEMA 2012)
- a pre-feasibility engineering study of water supply from Lake Albert for injection purposes (Atkins 2010)
- a national water resources assessment report (MWE–DWRM 2013).

6.3.3.4 Soils

The soils in association with the Tilenga feeder pipeline are characterised as low productivity for the first two thirds of the route and more productive for the last third of the route. Soils within the EACOP project route are characterised as low to medium in productivity.

Soils AOI

The soils AOI during the project construction phase will encompass the project footprint defined by:

- the pipeline RoW
- AGI locations
- construction camps and facilities associated with construction
- access roads.

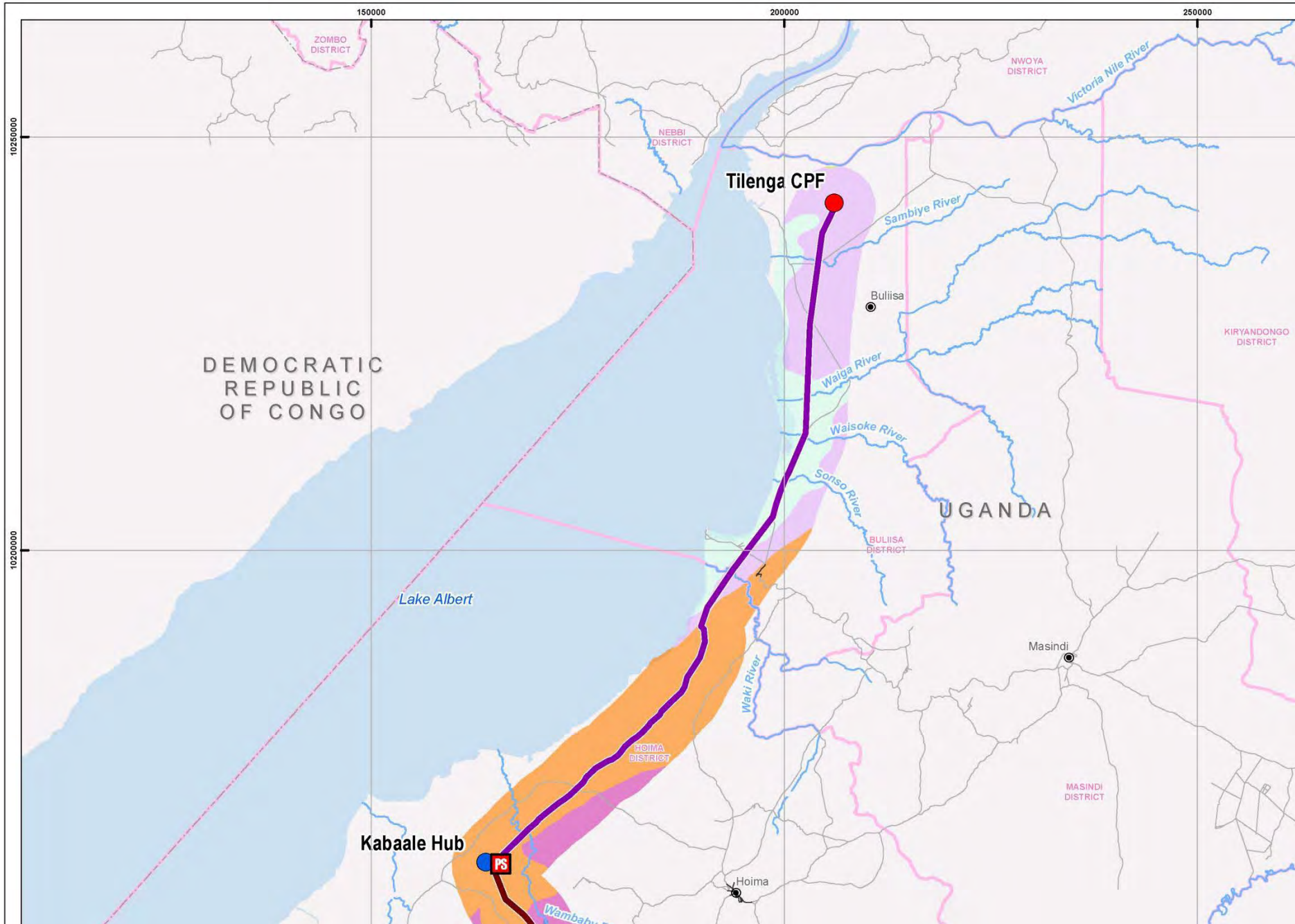
The soils AOI during the operation phase will include:

- the pipeline RoW
- AGIs
- areas at risk from spillages and leaks, compaction and erosion.

Existing Soil Baseline Conditions

The soils on Tilenga feeder pipeline route between KP0 and KP60 are characterised as low productivity. The soils between KP60 and KP95 are more productive (low–medium) and the land is used for producing maize and coffee. Figure 6.3–14 shows the soil types traversed by the feeder pipeline.

Soils associated with the Tilenga feeder pipeline and EACOP project (se Figure 6.3–15) routes have been classified according to the Food and Agriculture Organization (FAO)–United Nations Educational, Scientific and Cultural Organization (UNESCO) system and based on data from the National Agricultural Research Laboratories (NARL) and Global Yield Gap Atlas (K. Kaizzi 2017) and Ministry of Lands, Housing and Urban Development (2006).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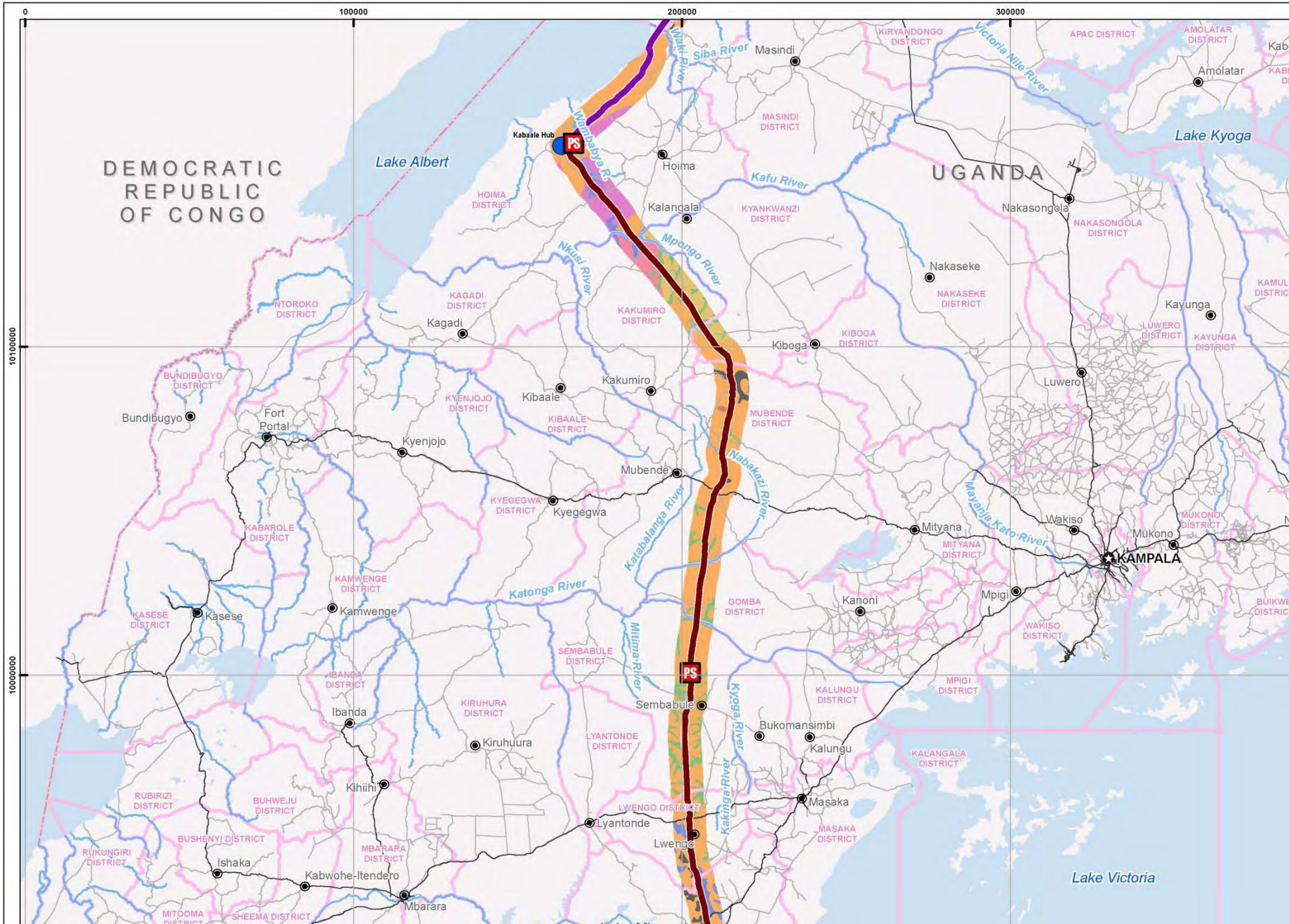
Buliisa
KIRYANDONGO DISTRICT
DEMOCRATIC REPUBLIC OF CONGO
Waiga River
Waisoke River
Sonso River
UGANDA
BULIISA DISTRICT
Lake Albert
Masindi
Waki River
HOIMA DISTRICT
MASINDI DISTRICT
Kabaale Hub
PS
Hoima
Wambabu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Kabaale Hub
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Waki River
Siba River
Wambabya River
Kafu River
Mpongo River
Nkusi River
Nabakazi River
Katabalanga River
Katonga River
Mitima River
Kyoga River
Kakinga River
Mayanja Kato River
Victoria Nile River
Masindi
Hoima
Kalangala
Nakasongola
Nakaseke
Kayunga
Kiboga
Luwero
Kakumiro
Kagadi
Kibaale
Bundibugyo
Fort Portal
Kyenjojo
Mubende
Kyegegwa
Mityana
Wakiso
Mukono
KAMPALA
Kanoni
Mpigi
Kamwenge
Kasese
Ibanda
Kiruhuura
Sembabule
Bukomansimbi
Kalungu
Masaka
Kihiihi
Lyantonde
Lwengo
Ishaka
Kabwohe-Itendero
Mbarara
HOIMA DISTRICT
KYANKWANZI DISTRICT
NAKASONGOLA DISTRICT
NAKASEKE DISTRICT
KAKUMIRO DISTRICT
KIBOGA DISTRICT
LUWERO DISTRICT
KAYUNGA DISTRICT
NTOROKO DISTRICT
KAGADI DISTRICT
BUNDIBUGYO DISTRICT
KYENJOJO DISTRICT
KIBAALE DISTRICT
MUBENDE DISTRICT
KYEGEGWA DISTRICT
KABAROLE DISTRICT
KAMWENGE DISTRICT
KASESE DISTRICT
IBANDA DISTRICT
KIRUHURA DISTRICT
SEMBABULE DISTRICT
GOMBA DISTRICT
MITYANA DISTRICT
MPIGI DISTRICT
WAKISO DISTRICT
KALUNGU DISTRICT
LYANTONDE DISTRICT
LWENGO DISTRICT
MASAKA DISTRICT
KALANGALA DISTRICT
RUBIRIZI DISTRICT
BUHWEJU DISTRICT
BUSHENYI DISTRICT
RUKUNGIRI DISTRICT
MBARARA DISTRICT
MITOOMA DISTRICT
SHEEMA DISTRICT
MASINDI DISTRICT
KIRYANDONGO DISTRICT
APAC DISTRICT
AMOLATAR DISTRICT
Amolatar

Table 6.3-2 lists soil types and their characteristics for the Tilenga feeder pipeline and Table 6.3-3 the EACOP project.

Table 6.3-2 Soil Types and Characteristics – Tilenga Feeder Pipeline

KPs (km)	FAO (UNESCO) Classification	Description	Parent Rock	Land Use	Productivity	Drainage*
0–25	LIXIC FERRALSOLS	Reddish-brown sandy loams with occasional ironstone	Kaiso sands and clays	Cotton, cassava, grazing and big game	Low	W
25–45	CALCISOLS	Black clays and sands	Recent lake and river alluvium	None	Low	-
45–55	LIXIC FERRALSOLS	Reddish-brown sandy loams with occasional ironstone	Kaiso sands and clays	Big game	Low	W
60–80	ACRIC FERRALSOLS	Shallow dark brown or black sandy loams often very stony	Granites, gneisses, schists, amphibolites	Occasional coffee and maize	Low to medium	W
80–95	ACRIC FERRALSOLS	Reddish and reddish brown gritty clay loams	Basement complex granites and gneisses and schists	Arabica coffee, maize	Low to medium	W

NOTES: *W = well drained, P = poorly drained

Table 6.3-3 Soil Types and Characteristics – EACOP Project

KPs (km)	FAO (UNESCO) Classification	Description	Parent Rock	Land Use	Productivity	Drainage*
0–10	ACRIC FERRALSOLS	Reddish and reddish brown gritty clay loams	Basement complex granites and gneisses and schists	Arabica coffee, maize	Low to medium to high	W
10	DYSTRIC REGOSOLS	Yellowish-red clay loams occasionally shallow over phyllite	Bunyoro series tillites and phyllites	Some robusta coffee	Low to medium	W

Table 6.3-3 Soil Types and Characteristics – EACOP Project

KPs (km)	FAO (UNESCO) Classification	Description	Parent Rock	Land Use	Productivity	Drainage*
15	GLEYSOLS	Dark brown sandy loams over dark grey clays	Recent river alluvium	Rough grazing	Low to nil	P
20–25	DYSTRIC REGOSOLS	Yellowish-red clay loams occasionally shallow over phyllite	Bunyoro series tillites and phyllites	Some robusta coffee	Low to medium	W
30–35	ACRIC FERRALSOLS	Reddish and reddish brown gritty clay loams	Basement complex granites and gneisses and schists	Arabica coffee, maize	Low to medium	W
40	GLEYSOLS	Dark brown sandy loams over dark grey clays	Recent river alluvium	Rough grazing	Low to nil	P
45	LUVISOLS	Deep red clay loam over laterite	Basement complex gneisses and amphibolites	Cotton	High to low	W
50	PETRIC PLINTHOSOLS (Acric)	Red gravelly loams underlain by soft laterite	Basement complex granites and gneisses	Coffee, tobacco, cotton	Medium to low	W
55	GLEYIC ARENOSOLS	Pale yellow fine sands	Recent alluvium	Rough grazing	Nil to low	P
60–65	ACRIC FERRALSOLS	Red gravelly loams underlain by soft laterite	Singo Batholith granites often porphyritic	Tobacco, cotton, coffee	Medium to low	W
70–75	PETRIC PLINTHOSOLS (Acric)	Red gravelly loams underlain by soft laterite	Basement complex granites and gneisses	Coffee, tobacco, cotton	Medium to low	W

Table 6.3-3 Soil Types and Characteristics – EACOP Project

KPs (km)	FAO (UNESCO) Classification	Description	Parent Rock	Land Use	Productivity	Drainage*
80–85	ACRIC FERRALSOLS	Red sandy clay loams with relic murram	Toro sandstones	Cotton, tobacco, robusta coffee	Medium to low	W
90	LEPTOSOLS	Shallow humose loams over disintegrating laterite	Sheet ironstone	Sparse grazing	Nil	W
95–100	ACRIC FERRALSOLS	Red sandy clay loams with relic murram	Toro sandstones; Singo Batholith granites often porphyritic	Cotton, tobacco, robusta coffee	Medium to low	W
105	GLEYIC ARENOSOLS	Pale yellow fine sands	Recent alluvium	Rough grazing	Nil to low	P
110–140	ACRIC FERRALSOLS	Red gravelly loams underlain by soft laterite	Singo Batholith granites often porphyritic	Tobacco, cotton, coffee	Medium to low	W
145	GLEYIC ARENOSOLS	Pale yellow fine sands	Recent alluvium	Rough grazing	Nil to low	P
150–210	ACRIC FERRALSOLS	Brown gravelly loams	Toro and Basement complex granites	Cotton, food crops	Low; Medium to low	W
215–230	GLEYIC ARENOSOLS	Pale yellow fine sands; Yellowish red gravelly loams	Recent alluvium; Toro gneisses and granites	Rough grazing; Cotton, tobacco	Nil to low; Medium to low	P-W
235	GLEYSOLS	Dark brown sandy loams over dark grey clays	Recent river alluvium	Rough grazing	Low to nil	P
240–245	ACRIC FERRALSOLS	Reddish brown clay loams	Kargwe–Ankolean Phyllites	Robusta coffee	Low to medium	W
250–255	GLEYSOLS	Dark brown sandy loams over dark grey clays	Recent river alluvium	Rough grazing	Low to nil	P

Table 6.3-3 Soil Types and Characteristics – EACOP Project

KPs (km)	FAO (UNESCO) Classification	Description	Parent Rock	Land Use	Productivity	Drainage*
260–265	ACRIC FERRALSOLS	Reddish brown clay loams	Kargwe–Ankolean Phyllites	Robusta coffee	Low to medium	W
270–275	GLEYSOLS	Dark brown sandy loams over dark grey clays	Recent river alluvium	Rough grazing	Low to nil	P
280	ACRIC FERRALSOLS	Yellowish red loams underlain by soft laterite	Toro gneisses and granites	Cotton, robusta coffee	High	W
285–295	PLANOSOLS	Grey coarse sands	Lake deposits	Bambara nuts, rough grazing	Low to nil	P

NOTES: *W = well drained, P = poorly drained

Agriculture in the AOI is practiced mainly on smallholdings ranging from 0.5 to 1.5 ha (Fungo et al. 2010). A growing population and the introduction of annual food and cash crops that are more likely to deplete soil nutrients have affected farming yields. In addition, there is increasing evidence of severe soil degradation caused by erosion (mining, deforestation) in Uganda (Lufafa et al. 2003).

For the Tilenga feeder pipeline, the soils between KP0 and KP60 are characterised as low in productivity. The soils between KP60 and KP95 are more productive (low–medium) and the agricultural land is mostly used for growing maize and coffee.

The soils within the EACOP project AOI are characterised as low to medium in productivity, and land is suitable for growing coffee, maize, tobacco and cotton. Soils with higher productivity were found to occur at three locations: KP5, KP45 and KP280.

Potential Sources of Soil Contamination

Various locations were visited along the pipeline route during a scoping visit in April 2017 and *ad hoc* observations did not indicate potential sources of large-scale or significant contamination along the Tilenga feeder pipeline and the EACOP project.

Human settlements are close to the route corridors for part of their lengths, primarily small villages and hamlets, and some larger settlements, such as Hoima and Mubende. Within these areas, there is the potential of contamination resulting from waste disposal.

Away from settlements the projects' route corridors, particularly the EACOP project, mostly traverse farm land. In these areas, there is the possibility that the soils have been exposed to herbicides or pesticides.

Scoping Baseline Data Collected

During scoping, the baseline data collection for soil included a review of the following desktop resources:

- Global Yield Gap Atlas, 2017 (K. Kaizzi 2017)
- The National Land Use Policy 2017 (Ministry of Lands, Housing and Urban Development 2006)

6.3.3.5 Landscape

The topography traversed by the first half of the Tilenga feeder pipeline is predominantly flat to gently rolling terrain and the second half is hillier. The Kabaale Hub is planned to be on a slightly exposed and elevated area of the rift escarpment. The EACOP project route corridor would traverse gently undulating grass and farmland, hills with open plateaus and bare rocky outcrops, open grassland, wetlands and, near the border with Tanzania, a drier, more sparsely vegetated level landscape.

Landscape AOI

The landscape AOI during the construction phase encompasses areas from where the project components and the construction activities could be visible. During the operational phase, the landscape AOI will encompass areas where the pipeline RoW and AGI are visible.

Existing Baseline Landscape Conditions

From the start of the Tilenga feeder pipeline at the Tilenga central processing facility (CPF), the pipeline corridor extends south for approximately 95 km to the Kabaale Hub. The landscape of the Tilenga CPF, an upstream project component, is a predominantly flat to gently undulating plateau that rises gradually from Lake Albert to approximately 600 m above sea level (masl) in the west and to 750 masl in the east.

The topography across the route corridor is predominantly flat to gently rolling terrain for the first 55 km, with elevations ranging from approximately 650 to 700 masl as it skirts Lake Albert. Land cover is predominantly grassland and scrubland. The feeder pipeline route then rises above the rift escarpment to elevations greater than 1000 masl, east of Lake Albert, where the landscape changes to a more hilly area approaching the Kabaale Hub.

The location of the Kabaale Hub consists of undulating to hilly terrain on an escarpment, which rises from approximately 650 masl in the west to over 1300 masl in the east. The settlements of Kabaale and Kijagambya are approximately 3.5 km to the west from the hub along the tarmac road that is parallel to Lake Albert.

The Kabaale Hub will be located on a slightly exposed and elevated area of the escarpment, which is undulating with some hillocks and mixed land cover of scrubland, clusters of trees and small settlements with their associated farms.

From the Kabaale Hub, the EACOP route corridor is routed to the southeast, through the southern edge of the Wambabya Forest Reserve, through gently undulating grass and farmland. Continuing eastwards, the route traverses landscape that is increasingly characterised by hills with open plateaus and bare rocky outcrops, set in gently undulating terrain of farmland interspersed by tree plantations. Here the project crosses the Kafu River and then continues north through an undulating landscape that consists mostly of intensively farmed land, predominantly maize and banana, and areas of scrubland. Passing through the Taala Forest Reserve, land cover changes to open grassland within which there appears to be small-scale mining activity. This landscape continues to Kitenga village, after which croplands give way to wetlands associated with the rivers Nabakazi and Katonga and a more open landscape, with gently undulating topography.

Pumping Station 2 is in an open, savannah-like isolated location. Although the pumping station site is relatively flat, the surrounding landscape is dotted with low hills between which there are seasonally wet, low-lying areas. Settlements are predominantly along the tertiary road that runs north–south in relation to the facility. Other than these small settlements, occasional large cattle ranches with associated bomas[18] dot the landscape.

The landscape at KP190 has wetlands continuing to the south and grassland increasingly giving way to coffee production and, on a smaller scale, farming. This pattern continues along the route until entering the more populated region to the west of Kyotera at KP250. From there to KP285, land cover is dominated by a mix of grassland and settled areas, after which the population density reduces in what becomes a drier, more sparsely vegetated level landscape when approaching the border with Tanzania.

Scoping Baseline Data Collected

During scoping, the baseline data collection for landscape included a review of the following desktop resources:

- environmental and social VECs GIS data
- aerial mapping
- EACOP site visit and drive through, April 2017
- information gathered from the initial stakeholder engagement process.

6.3.3.6 Air Quality and Climate Change

Air quality in the Tilenga feeder pipeline and EACOP project AOI is likely to be relatively good because of the rural and semirural nature of the study area. The most significant existing impact on air quality is likely to come from domestic and agricultural activities (e.g., seasonal burning of vegetation at the start of the farming season).

Uganda has not undertaken a systematic study to identify the distribution of air pollutants throughout the country, although it is acknowledged that poor air quality

[18] Livestock enclosure

associated with road transport and emissions from industrial installations is likely to have led to an increase in air pollution in urban areas (National Environment Management Authority 2010). For these reasons and based on observed trends, it is anticipated that concentrations of NO_2, particulate matter and other key air pollutants will be present at higher concentrations in industrial areas than in rural areas.

Per capita, Uganda has one of the world's lowest greenhouse gas emissions. However, the average annual temperature in Uganda has been shown to be increasing in recent years, combined with an overall reduction in rainfall and climate change is predicted to have a future effect on agriculture.

Air Quality and Climate Change AOI

During the construction phase, the air quality AOI will encompass affected airsheds (principally at risk from airborne dusts) arising from construction of the pipeline, AGIs, camps and access roads to a radius of approximately 300 m of project activities. Construction support equipment, such as incinerators at construction camps may have a larger AOI of up to 3 km radius from the source.

The air quality AOI during the operational phase will be the geographical area directly affected or at risk from the operational activities including any accidental events. A potential AOI of 3 km radius around AGIs that include power generation should be expected.

Climate change impacts, by definition, can be wide in extent. For scoping, the AOI is considered the existing climate in Uganda with due consideration to other sector contributors and national contributions to climate change.

Air Quality and Climate Change Baseline

Air Quality

This subsection provides an early indication of the air quality environment for both the Tilenga feeder pipeline and EACOP project in the AOI, using general observations. In addition, data were used from previous studies that overlap with sections of the projects' AOI.

An initial site visit undertaken in April 2017 for the Tilenga feeder pipeline and EACOP project routes provided a good understanding of the AOI defined by pipeline, permanent AGIs, temporary construction facilities and permanent and temporary access roads.

For both the Tilenga feeder pipeline and EACOP project, the AOI is predominantly rural or semirural in nature, and air quality in such areas can be assumed to be good. However, there may be some communities near the projects' routes where ambient air quality may be affected by emissions of volatile organic compounds from kerosene stoves and lamps, and oxides of nitrogen, carbon monoxide, sulphur dioxide and particulate matter from domestic and agricultural activities such as burning of vegetation and waste.

The most significant effect on existing local air quality is likely to be the generation of dust under dry conditions by construction activities.

Climate Change

In the last 50 years, the average annual temperature has increased by 1.3°C in Uganda, while annual rainfall has been decreasing. Regional climate model studies developed by the International Panel for Climate Change (IPCC) suggest that there will be drying over most parts of Uganda in the months of August and September by the end of the 21st century because of a weakening Somali jet stream and an Indian monsoon (IPCC 2014). In addition, an increase in near-surface temperature for the country of about +2°C over the next 50 years and about +2.5°C in the next 80 years is predicted. Modelling also predicts a slight decrease in total annual rainfall for most of the country, with slightly wetter conditions over the west and northwest. Rainfall totals may drop significantly over Lake Victoria (a reduction of 20%).

According to a survey undertaken by Oxfam Uganda in 2012, climate change will have an impact on Arabica coffee growing areas in Uganda, including the Rwenzori Mountains. Most areas will become less suitable, and those at altitudes less than 1500 m will be severely affected.

Uganda has one of the lowest greenhouse gas emissions per capita in the world, at approximately 1.39 t carbon dioxide equivalent in 2011, contributing 0.099% of the world's total greenhouse gas emissions. Combined, the energy (excluding transport) and land use and forestry sectors accounted for approximately 36% of national emissions in 2000, with 62% accounted for by transport and agriculture sectors combined.

Scoping Baseline Data Collected

During scoping, the baseline data collection for air quality and climate change included a review of the following desktop resources:

- baseline air quality studies and other documents developed for other projects in the AOI
- high-resolution satellite imagery over a 25-km-wide corridor
- recently acquired (2017) light detection and ranging (LIDAR) data for a 2-km-wide corridor centred on the preliminary pipeline route
- relevant peer-reviewed and grey literature on air quality data in the project AOI
- RSK-GIE initial site visit report, May 2017
- Uganda Climate Action Report for 2015, Irish Aid, 2016
- Uganda's intended nationally determined contribution (INDC), Ministry of Water and Environment, 2015.

6.3.3.7 Acoustic Environment

The acoustic environment for the Tilenga feeder pipeline and EACOP project is dominated by wildlife and weather sound in areas away from human activity. In populated areas, human activity will be the dominant source of noise but this level may be exceeded by traffic noise closer to roads. Natural sources of acoustics are considered to create sound, and human sources are considered noise.

Acoustic Environment AOI

The transient, but consistent nature of pipeline construction activities means the AOI is considered to be 250–500 m for noise and 25–100 m for vibration from the edge of the works. The AOI for AGIs and temporary facilities will be similar, although the more varied nature of construction activities for these sites means that the AOI extent will not necessarily be uniform in all directions.

During the operational phase, Tilenga feeder pipeline and EACOP project noise emissions will largely be limited to the AGIs and an AOI will be established for each AGI depending on the equipment to be installed. The vibration AOI for the operational phase is likely to be contained to the operational RoW, as operational activities are unlikely to be associated with significant vibration.

Acoustic Environment Baseline

Before the acquisition of recorded baseline sound data during the ESIA, this section indicates the expected sounds levels in the AOI based on general observations. In addition, data were used from previous studies that overlap with sections of the projects' AOI.

An initial site visit undertaken in April 2017, along the Tilenga feeder pipeline and EACOP project routes provided a good understanding of the likely environments that may be affected and the proximity of receptors to the pipeline route, permanent AGIs, temporary construction facilities and permanent and temporary access roads.

For both the Tilenga feeder pipeline and EACOP project, the site visit showed variations in the sound levels, from isolated areas affected by purely natural sources (wildlife, watercourses and weather) to areas close to population centres where noise sources such as road vehicles, agriculture, power generation and general human activities dominate.

The presence of wildlife may determine the difference in sound levels between day and night. For example, in forested or marshland areas, sound levels during the night can be higher than during daytime because of heightened nocturnal animal activity. Actual background sound levels as an $L_{90,T}$[19] in these areas can vary from close to human threshold at 18–20 dB(A) up to 55/60 dB(A). Even higher levels can be recorded over short periods close to watercourses, marshland areas or standing water where amphibian noise can be significant.

Close to roads, noise levels are likely to be influenced less by wildlife and dictated more by traffic flow. Sporadic traffic movements may mean average baseline noise levels are lower than expected. Noise levels are likely to vary from 25 dB(A) to 50 dB(A) $L_{90,T}$. In high traffic areas, daytime noise levels will be far greater than levels expected at night.

In areas close to human settlements, noise levels, on average, are higher than in uninhabited areas, with actual levels dependent on proximity to noise sources (generators, water pumps, community events, recreational facilities, retail areas, manufacturing, roads). Noise levels as an $L_{90,T}$ are likely to be 25 dB(A) to 50 dB(A).

[19] A noise level index: the noise level exceeded for 90% of the time over the period T. L90 can be considered the average minimum noise level and it is often used to describe background noise.

There will be minor seasonal variance in sound levels. The greatest variance in the sound levels will be dictated by the time of day. Seasonal variance in sound levels will be the result of meteorological conditions and variations in wildlife behaviour.

Based on the assumptions in this subsection, Table 6.3-4 provides an overview of the acoustic environment near the key EACOP project components.

Table 6.3-4 Acoustic Environment – Tilenga Feeder Pipeline and EACOP Project

Site Use	Site Reference	Likely Sensitive Receptors	Land Use	Estimated Baseline Sound Levels (dB(A) $L_{90,T}$)
Tilenga Pigging Station (within CPF)	KP0	Kimoli village Bukindwa village	Forest and scrubland. Some cultivated land	25–50 dB(A)
Tilenga Main Camp and Pipe Yard	MPCY	Butiaba village	Forest and scrubland. Waki River 1 km away	25–50 dB(A)
Kabaale pumping station	PS1	Kabaale village Social structures in AOI	Combretum wooded grassland	20–50 dB(A)
Main Camp and Pipe Yard 1	MCPY1	Kabaale village Other structures nearby	Combretum wooded grassland	20–50 dB(A)
Proposed MCPY site		Munteme village Other structures nearby Local fauna	Forest	25–55 dB(A)
Mobile Camp 1	MBC1	Gayaza village Several structures along route, within 300 m (possibly habitable) Primary school and trading centre nearby Local fauna	Forest and savannah	20–50 dB(A)
Main Camp and Pipe Yard 2	MCPY2	Kyenda village Local fauna	Savannah, combretum wooded grassland. Mixed agriculture	20–50 dB(A)
Mobile Camp 2	MBC2	Njaza village Lwantale village Structures along pipeline (within 50 m) route	Forest, savannah and scrubland	20–50 dB(A)

Table 6.3-4 Acoustic Environment – Tilenga Feeder Pipeline and EACOP Project

Site Use	Site Reference	Likely Sensitive Receptors	Land Use	Estimated Baseline Sound Levels (dB(A) $L_{90,T}$)
Pumping Station 2	PS2	Njaza village Lwantale village Structures along pipeline (within 50 m) route	Forest, savannah and scrubland	20–50 dB(A)
Main Camp and Pipe Yard 3	MCPY3	Kitakomaga village Kyetume village Mbirizi village School nearby	Forest, savannah and scrubland. Cultivated grassland in some areas	25–50 dB(A)
Mobile Camp 3	MBC3	Kamengo village Archaeological site nearby	Wetland area. Some scrubland, but predominantly grassland, with a small proportion of cultivated land	25–50 dB(A)
Coating yard	CY-UG	Lukulavu village	Cultivated land, surrounded by scrubland Grassland on poorly draining or seasonally flooded soils	25–50 dB(A)

Scoping Baseline Data Collected

During scoping, the baseline data collection for the acoustic environment included a review of the following desktop resources:

- RSK-GIE initial site visit report, May 2017
- high-resolution satellite imagery over a 25-km-wide corridor
- recently acquired (2017) light detection and ranging (LIDAR) data for a 2-km-wide corridor centred on the preliminary pipeline route
- relevant peer-reviewed and grey literature on acoustic data in the project AOI
- baseline acoustic studies and other documents developed for other projects in the AOI.

6.3.3.8 Archaeology and Cultural Heritage

The review of available data sources and stakeholder engagement identified archaeological and cultural heritage assets, of which:

- none are known to be within the AOI
- 13 are within 1 km of the AOI
- 111 are within 20 km of the AOI.

Although no sites have been identified within the AOI, the sites in the surrounding area provide an indication of the types of unrecorded archaeological and cultural heritage asset which may be found within the AOI during construction. The projects' chance find procedure would manage these finds.

The archaeology and cultural heritage AOI during the construction phase will encompass the projects' footprint defined by:

- the projects' RoW
- AGI locations
- construction camps and construction facilities
- access roads.

The archaeology and cultural heritage AOI during the operational phase will include:

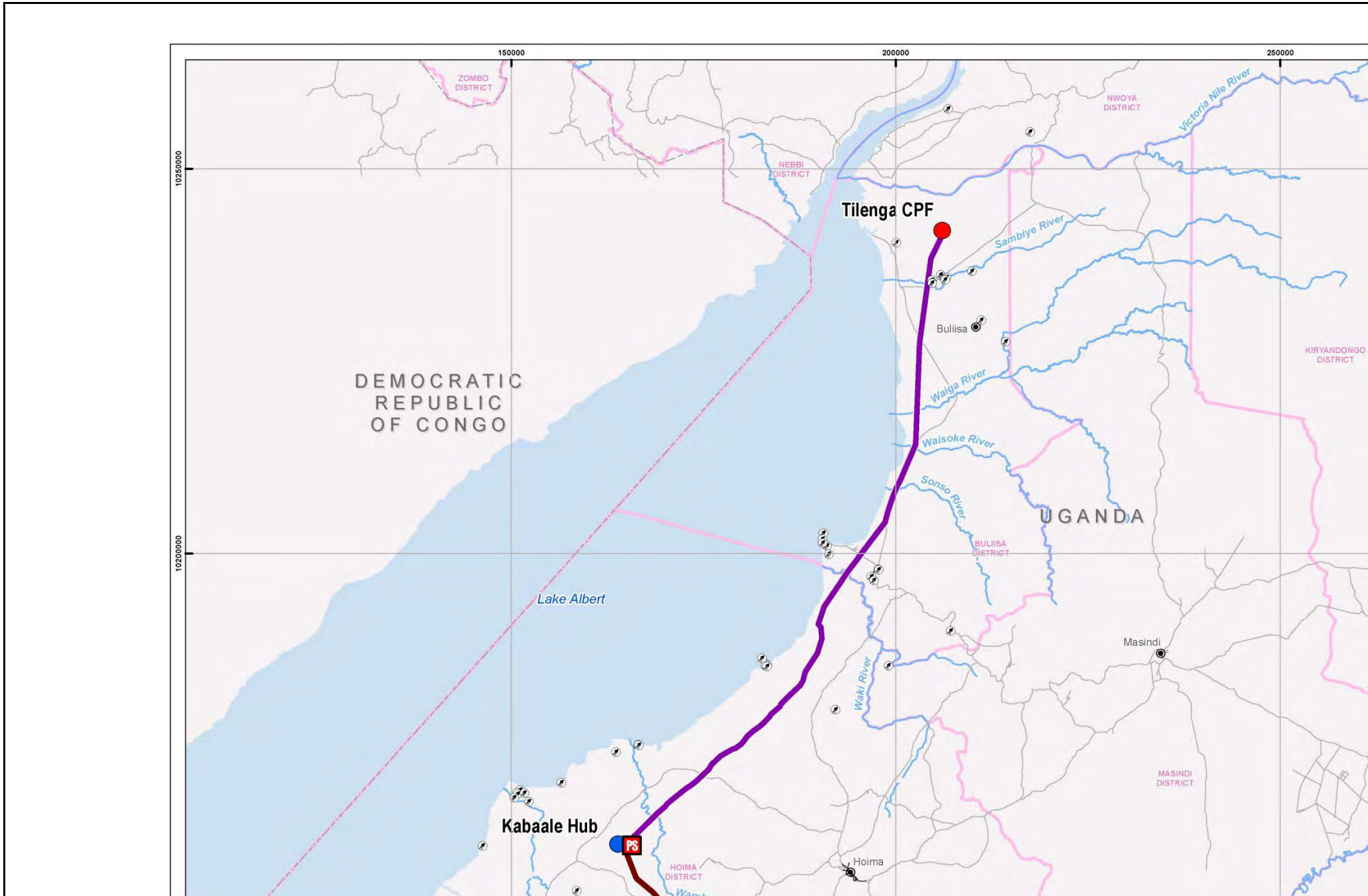
- the projects' RoW
- AGI locations.

Indirect visual impacts on archaeological and cultural heritage receptors beyond the direct physical footprint of the facilities will be considered.

Archaeology and Cultural Heritage Sites

The cultural heritage sites identified during scoping were grouped into the following categories, which are considered to be indicative of what might be found within the AOI:

- archaeological and historical sites
- religious sites
- cemeteries (current and disused)
- early industrial sites (for example, iron working)
- important palaeontological sites
- memorials and battle sites
- military fortifications
- rock art
- sites of early occupation (both existing settlements with a long history and abandoned sites)
- proposed World Heritage Site (nominated to the World Heritage Committee).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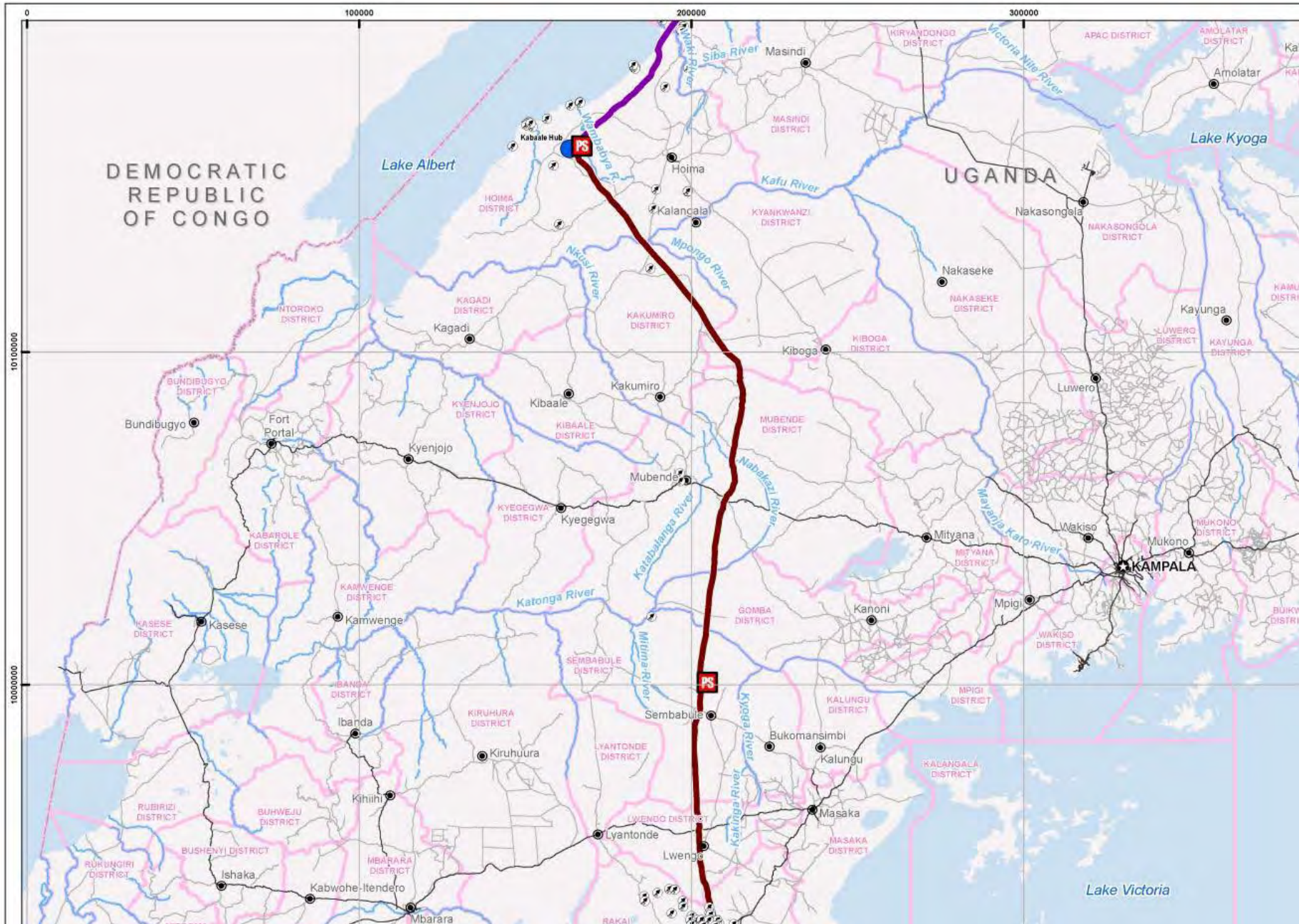
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Kiruhuura
Sembabule
Bukomansimbi
Kalungu
Masaka
Kihiihi
Lyantonde
Lwengo
Ishaka
Kabwohe-Itendero
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Nkusi River
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Intangible cultural heritage is defined as cultural resources, knowledge, innovations and/or practices of local communities embodying traditional lifestyles (PS 8). It is considered to include cultural heritage receptors that are the focus for social practice and valued by local communities over and above their recognised evidential heritage value. These sites may also have additional value because of their setting, touristic or other value that could be affected. This may include ethnically or spiritually important landscapes, sites and places of worship. The scoping study has identified intangible cultural heritage assets that include ritual trees, caves, drumming stones and wells.

Many of the available archaeology and cultural heritage asset studies do not include accurate location data and, in some cases, there are contradictions between sources, Additional work is required to identify the locations and it is expected that additional locations may be identified. The information obtained only identified the presence or absence of a site, but no information could be obtained for the condition of the identified sites.

Scoping Baseline Data Collected

Scoping for archaeology and cultural heritage has included a review of the following desktop resources:

- baseline data from the environmental and social screening report (RSK 2016)
- data sources held in Uganda's national archives and museums
- academic literature
- knowledge of in-country experts.

Additional information was obtained from liaising with key stakeholders during a field trip in May 2017. ESIA team members also met with the Uganda Department of Museums and Monuments and senior stakeholders to ensure that all available cultural heritage data sources of national and international importance have been considered.

6.3.3.9 Socio-economic and Health AOI

The social and health AOI during the project construction phase will encompass the projects' footprint, defined by the pipeline RoW, AGIs, construction camps, associated construction facilities, truck driver stops and access roads. The AOI will also include communities likely to supply construction labour, goods and services and communities likely to experience influx. The AOI will include areas sensitive to indirect impacts, such as deposition of airborne dust or dispersion of pollutants, which could affect livelihoods and economic return for the land.

The AOI during the operation stage will include the permanent facilities and other areas affected directly or indirectly affected by beneficial or adverse impacts from the project such as improved transport.

Governance and Administration

The government of Uganda has three branches:

- an executive branch comprising the president, vice president, prime minister, and cabinet
- a legislative branch comprising a parliament
- a judicial branch comprising the Magistrates' Courts, High Court, Court of Appeals (Constitutional Court), and Supreme Court.

The government structure of Uganda consists of six levels (see Figure 6.3–18).

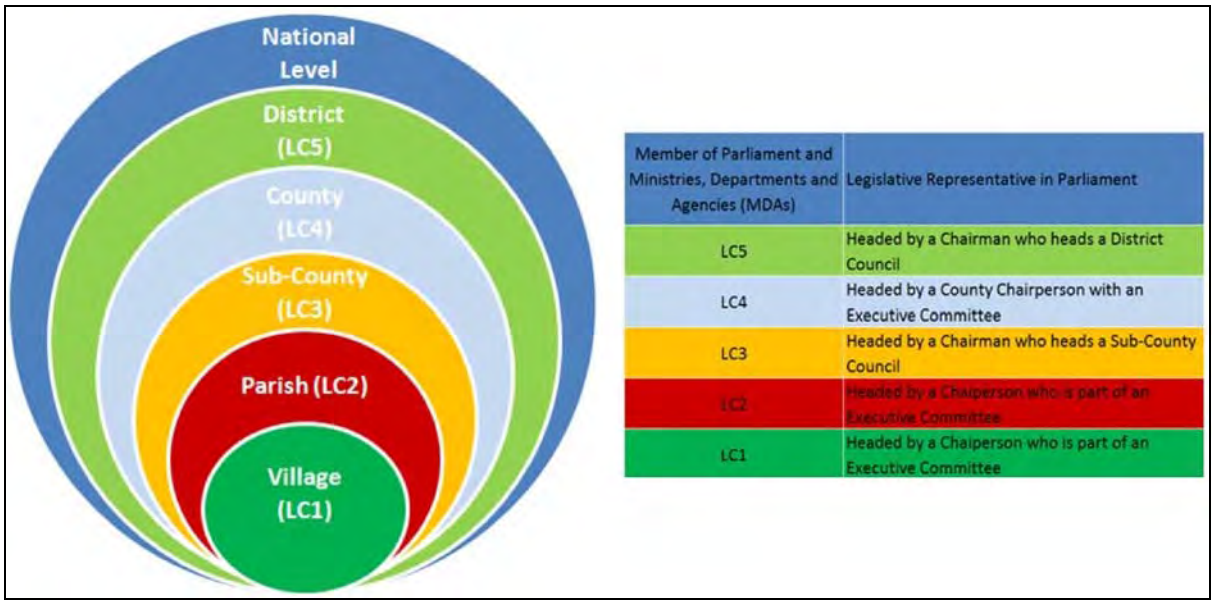


Figure 6.3–18 Government Structure from National to Village Level

NOTE: Figure adapted from the Total E&P Uganda Stakeholder Strategy July 2013–June 2014

Districts have an elected chairperson (LC5) who is supported by a district council comprising representatives from subcounties and technical personnel.

In addition to government structures, there is traditional leadership. The Institution of Traditional or Cultural Leaders Act (2010) recognises the Bunyoro-Kitara and Buganda as two of Uganda's 13 traditional kingdoms. The AOI is within the two kingdoms of Bunyoro-Kitara and Buganda. Table 6.3-5 lists the districts in the AOI (see Figure 2.2-5 for district locations). A traditional ruler (king) represents the kingdoms. The kingdoms are responsible for cultural matters such as funeral rites and marriage ceremonies, and have responsibility for other matters including community development programmes for health, education and land access (AECOM 2015).

Below the kingdom level, traditional leadership includes councils of elders and clan leaders who continue to play an important role in shaping attitudes and the resolution of disputes, particularly over land. Clan members elect clan leaders and the residents elect the council of elders within their area of jurisdiction. This system of traditional leadership continues to be recognised and respected by community residents. Women can also hold leadership positions on the council of elders,

although this is rare. However, they cannot be elected as clan leaders (AECOM 2015).

Districts, Counties and Subcounties

Table 6.3-5 lists the 9 districts, 12 counties and 35 subcounties which the Tilenga feeder pipeline and EACOP project traverses. Figure 6.3–19 shows these administrative divisions.

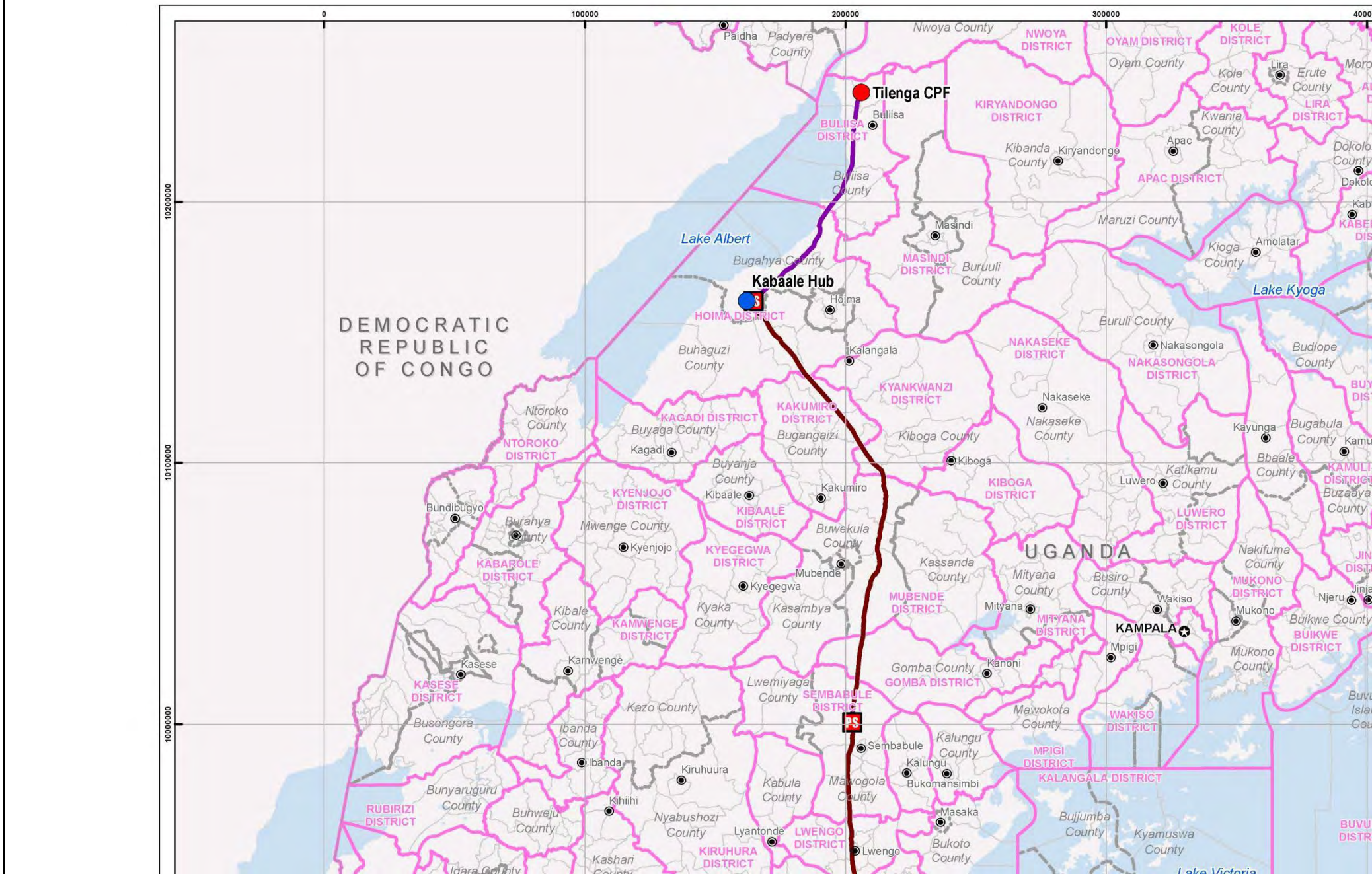
Table 6.3-5 District, Counties and Subcounties Traversed by the Projects

Districts (9)	Counties (12)	Subcounties (35)
Buliisa	Buliisa	Biiso Buliisa Buliisa Town Council Butiaba Kigwera Kihungya[20] Ngwedo
Hoima	Buhaguzi	Bugambe
		Buhimba
		Kiziranfumbi
	Bugahya	Buseruka
		Kigorobya
		Kigorobya Town Council
Kakumiro	Bugangaizi	Kasiita
		Mpasaana
		Nkooko
Kyankwanzi	Kiboga	Gayaza
		Ntwetwe
Mubende	Buwekula	Butoloogo
		Kitenga
		Madudu
Gomba	Gomba	Maddu
Lwengo	Bukoto	Lwengo
		Lwengo Town Council
		Ndagwe
Sembabule	Mawogola	Lugusulu
		Lwebitakuli

[20] Although beyond the AOI as defined in Section 6.2, the subcounty was included to confirm further the proximity to the AOI and to scope for the next phase.

Table 6.3-5 District, Counties and Subcounties Traversed by the Projects

Districts (9)	Counties (12)	Subcounties (35)
		Mijwala
		Sembabule Town Council
Rakai	Kakuuto	Kakuuto
	Kyotera	Kasaal
		Nabigasa
	Kakuuto	Kasasa
		Kifamba
	Kooki	Lwanda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Buliisa
BULIISA DISTRICT
KIRYANDONGO DISTRICT
Kibanda County
Kiryandongo
Apac
APAC DISTRICT
Kwania County
Buliisa County
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Buruuli County
Maruzi County
Kioga County
Amolatar
Bugahya County
Hoima
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NAKASEKE DISTRICT
Budiope County
Buhaguzi County
Kalangala
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Nakaseke County
Ntoroko County
NTOROKO DISTRICT
KAGADI DISTRICT
KAKUMIRO DISTRICT
Buyaga County
Bugangaizi County
Kiboga County
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Kayunga
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Buyanja County
Kibaale
Kakumiro
KIBOGA DISTRICT
Katikamu County
Luwero
Bbaale County
KAMULI DISTRICT
Buzaaya County
KYENJOJO DISTRICT
KIBAALE DISTRICT
Bundibugyo
Burahya County
Mwenge County
Kyenjojo
Buwekula County
LUWERO DISTRICT
KYEGEGWA DISTRICT
Kassanda County
Nakifuma County
KABAROLE DISTRICT
Mubende
Kyegegwa
Mityana County
Busiro County
MUKONO DISTRICT
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Njeru
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Gomba County
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GOMBA DISTRICT
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SEMBABULE DISTRICT
Kazo County
Busongora County
Ibanda County
Mawokota County
WAKISO DISTRICT
Sembabule
Kalungu County
Ibanda
Kiruhuura
Kalungu
MPIGI DISTRICT
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Bukomansimbi
Bunyaruguru County
Kabula County
Mawogola County
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Kihiihi
Buhweju County
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Demographics

According to the 2014 National Population and Housing Census, the population of Uganda was 34,634,650, with an annual growth rate of 3% since the 2002 Census (UBOS 2016). Mubende and Hoima are among the ten most populated districts in Uganda. The urban population of Uganda has increased by 23% since the 2009/10 Census. In 2014, the population density was 173 persons per km^2 and the national average household size was 4.7 persons. Table 6.3-6 presents the population numbers for the traversed districts and subcounties.

Table 6.3-6 Population in Districts Traversed by the Projects

District	Population	Population Density (/km^2)	Population Growth (/year)
Buliisa	115,506	36.1	4.9%
Hoima	573,903	158.9	4.27%
Kakumiro	293,108	184	Unavailable
Kyankwanzi	213,267	95.2	4.73%
Mubende	688,819	148	4.06%
Gomba	160,075	180	2.9%
Sembabule	252,994	79	2.83%
Lwengo	275,450,	192	3.1%
Rakai	518,002,	159.4	2.06%

NOTE: Data in the table are sourced from district development plans for the period 2015/16–2019/20.

The table indicates that the population density varies considerably, from 36.1/km^2 in Buliisa to 192/km^2 in Lwengo. The population growth also varies considerably: in Rakai, it is the lowest at 2.06% per year; in Kyankwanzi, it is the highest at 4.73% per year.

Economy

The gross domestic product (GDP) of Uganda experienced very slow to no growth between 2008 and 2010. There was a significant reversal from 2010, with the GDP growing at an average of 10.2% annually (UBOS 2016). This growth is attributable to a rapidly growing urban population that increasingly participates in the formal economy and the rising contribution of oil to the economy. Despite growth in the formal sector, approximately 45% of all economic activity in Uganda remains in the informal sector (UBOS 2016). This is the result of the relative weakness of the formal economy and corresponding inability to employ a sufficient number of people.

The informal economy is dominated by subsistence farming, which contributes nearly half (47%) of the informal GDP. The services sector dominates the formal economy, with 70% of the GDP in 2015 deriving from this sector. The other main contributors to the formal economy are industry (24% of GDP in 2015) and agriculture (5% of GDP in 2015) (UBOS 2016).

Infrastructure

Transport Services

Uganda's transport services include roads and airports and the Government is currently constructing standard-gauge railway lines between Tororo–Pakwach, Kampala–Tororo and Malaba–Kampala (Ministry of Works and Transport 2016). Figure 6.3–20 shows the main roads (sealed and murram), airports and railway in Uganda.

Air transport in Uganda is dominated by operations at Entebbe International Airport. An international airport is also planned within the refinery project area at Kabaale. The government of Uganda has designated five other airports as potential international entry and exit airports:

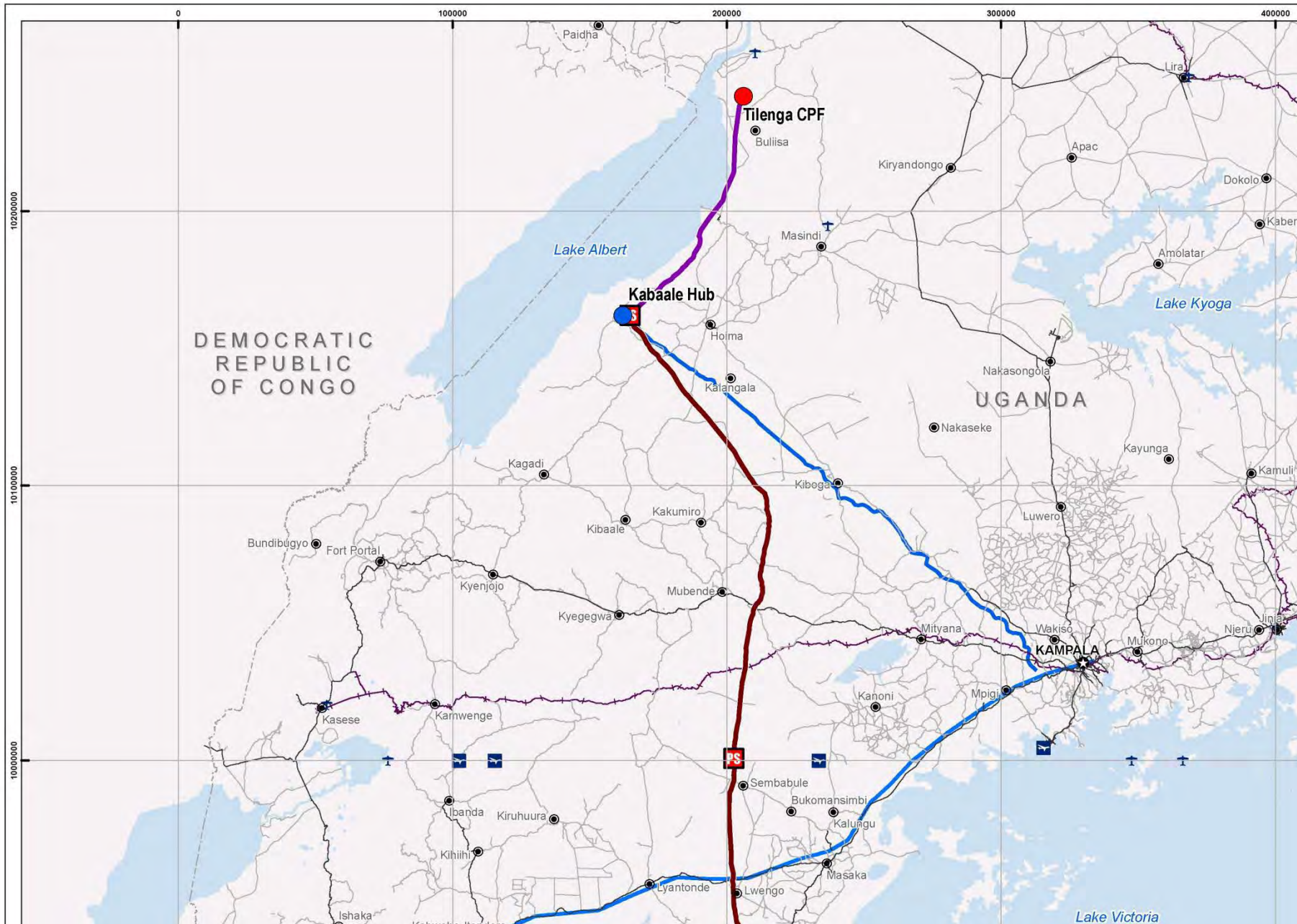
- Arua
- Gulu
- Pakuba
- Kidepo
- Kasese.

A further eight airfields can receive charter flights. Project-affected districts with domestic airfields include Rakai and Sembabule.

The road network that could be used to access the EACOP project route is a mix of tarmac and murram roads. Tarmac roads are primarily key routes between towns and cities, many of which have been improved to serve regional oil developments. Further upgrades are proposed and will be constructed over the next few years. The tarmac roads are in good condition, though speed bumps associated with the many villages and towns directly adjacent to the road, drastically reduces the average speed. For the EACOP project, the key routes comprise the Kampala (Busega)–Masaka and Mubende–Kakumiro–Kibaale–Kagadi roads, which connect Kampala with Mubende, and the Masaka to Mutukula road, which leads to the Uganda–Tanzania border.

Murram roads connect smaller towns and villages and vary significantly in quality. Many murram roads in the region that connect to the pipeline routes are in poor condition and not capable of accommodating construction traffic without upgrading. Road conditions deteriorate in villages or trading centres because of heavier usage. The condition and integrity of associated infrastructure (e.g., culverts, bridges) varies considerably with many requiring upgrades.

Communities are often established immediately adjacent to roads. Homes are often constructed up to the edge of the road and parked vehicles and people walking along the road tend to obstruct traffic.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Mubende
Kyegegwa
Mityana
Wakiso
Mukono
Njeru
Jinja
KAMPALA
Kanoni
Mpigi
Kasese
Kamwenge
Sembabule
Bukomansimbi
Ibanda
Kiruhuura
Kalungu
Kihiihi
Masaka
Lyantonde
Lwengo
Ishaka
Lake Victoria

Power and Water Supply

The majority of people in Uganda are not connected to the national electricity supply grid. *Tadooba* (tin lamps) remain the most common source of lighting, used in 66% of households compared to only 12% using electricity; the remainder use other means such as gas, paraffin and firewood. The country experiences frequent power cuts and there has been a large increase in electricity tariffs over the past 10 years (Mbendi 2016; UBOS 2014). Currently, there is considerable pressure for Uganda to upgrade the national power grid; it is estimated that by 2025, the upgrade will require over US$3.5 billion worth of investment (Mbendi 2016).

Almost all households (95%) use wood as a main source of energy for cooking. Rural households (86%) commonly use firewood whereas urban households (70%) more commonly use charcoal (Republic of Uganda 2013b). Despite the potential for renewable resources, there has been limited exploitation of biomass or solar power options (RECP 2017).

Water supply remains a national concern in Uganda where an estimated 8.4 million people lack access to safe water and 31.5 million people lack access to improved sanitation (Water 2017). Challenges surrounding water supply and sanitation can be observed at the district level. For example, in Buliisa, overall safe water availability is only 62% and only 51% of the population has access to a latrine; in Mubdene, safe water access stood at 43.8% and latrine access at 82% (UBOS 2016).

Standard of Living

Basic service provision and infrastructure in the project area is generally inadequate to meet the needs of communities. Table 6.3-7 presents the main development challenges facing districts traversed by the project.

Table 6.3-7 Main Development Challenges Facing Districts Traversed by the Projects

District*	Main Development Challenges
Buliisa	The district is 93.6% rural with most people being pastoralists, fisher-people or subsistence agriculturalists. In 2000–2010, a large amount of crude oil was found, hence the possibility of new employment opportunities and development prospects in the future (Buliisa District Local Government 2015)
Hoima	Rapid population growth, rural poverty, environmental degradation, resource depletion, high fertility rate, low agricultural productivity (Hoima District Local Government 2015)
Kakumiro	Poor road network, inadequate staffing in critical sectors like health and education, inadequate funding, low quantity and quality of social services (education, health, water), low agricultural production, high population growth (Kakumiro District Local Government 2015)
Kyankwanzi	Low groundwater potentials, high incidence of urban and rural poverty, environmental degradation, inadequate funding, disparities in access to social services and infrastructure, low operation and maintenance of water facilities (Kyankwanzi District

Table 6.3-7 Main Development Challenges Facing Districts Traversed by the Projects

District*	Main Development Challenges
	Local Government 2015)
Mubende	Poor road network, shortage of qualified personnel (health, education, production), inadequate funding, low agricultural production, high population growth (Mubende District Local Government 2015)
Gomba	Poor economic growth, climate change and animal disease outbreaks, lack of human capital and skills gaps, high infant mortality rate, low quantity of social services (Education) (Gomba District Local Government 2015)
Sembabule	Shortage of qualified health workers, personnel shortages and high drop-out rates in education, prolonged droughts, soil degradation, limited market information for farmers, lack of transport means, animal disease outbreaks (Sembabule District Local Government 2015)
Lwengo	Low levels of socio-economic infrastructural development (roads, education, health, water, electric power), narrow local revenue base, climate change, inadequate funding, poor sanitation and hygiene (Lwengo District Local Government 2015)
Rakai	Limited social services budget, encroachment on forests and other reserves, slow industrial growth, natural resource exploitation, environmental degradation (Rakai District Local Government 2015)

NOTE: *Districts in the table are presented based on their relative north to south location in relation to the projects' routes.

Table 6.3-7 shows that districts within the AOI share several development challenges relating to skills shortages, low quantity or quality of key infrastructure, inadequate funding and poverty. All districts identified HIV and AIDS as a major challenge.

Land and Property

The Land Act (1998) identifies four forms of land tenure in Uganda: customary, *mailo*, freehold and leasehold (MLHUD 2013); see Section 3.2.1.

Customary land tenure: the majority of Ugandans hold their land under this land tenure system, which applies to land governed by customary laws. Land under this tenure system is owned communally, jointly or individually, and is often presided over by elders or clan leaders. Over 60% of land in Uganda is held under this customary tenure system, most of which is in the northern, western and southern parts of the country. Key problems associated with this tenure include that it does not provide security of tenure for landowners and it discriminates against women (MLHUD 2013). However, recent changes have resulted in Certificates of Title of Customary Ownership being issued to customary land owners.

Mailo: under this tenure system, land is registered under the Titles Act, which grants the holder a land title and absolute ownership in perpetuity. This tenure

system recognises occupancy by tenants (known as *Kibanja* holders), whose relationship with the landowners is governed and guided by the provisions of the Land Act (1998). Land held under *mailo* tenure (approximately 9000 square miles) is mostly confined to Buganda (central Uganda) and Bunyoro (western Uganda) sections of which overlap with the AOI.

Freehold: the Registration of Titles Act also governs the third land tenure system, freehold. Under this system, a registration of title in perpetuity and conferment of full powers of ownership is provided to the landholder, who may use the land for any legal purpose. Only Ugandan citizens are entitled to own land under the freehold system and there is currently little land held under freehold tenure. Most of this land has been issued to church missionaries and academic institutions (MLHUD 2013).

Leasehold: this land-tenure system assigns land for a set period, usually 49 or 99 years, with agreed conditions and a rental fee or premium. Any landowner in Uganda – *mailo*, freehold or customary tenure – may award a lease to another individual (MLHUD 2013).

Land legislation in Uganda establishes that ownership conditions for men and women are the same. In practice, however, opportunities for women to claim their rights are often limited by traditional practices requiring women to obtain land through their male relations, husbands or sons (LANDac 2016).

Land conflicts represent the highest percentage of disputes reported both in formal and informal dispute resolution systems in Uganda. Common concerns reported are those associated with landlord-tenant relations on *mailo* land, land tenure insecurity in post-conflict Northern Uganda, disputes over land expropriation by the government and the implications of oil exploration and mining for local land tenure systems and rights (MLHUD 2013).

Livelihoods

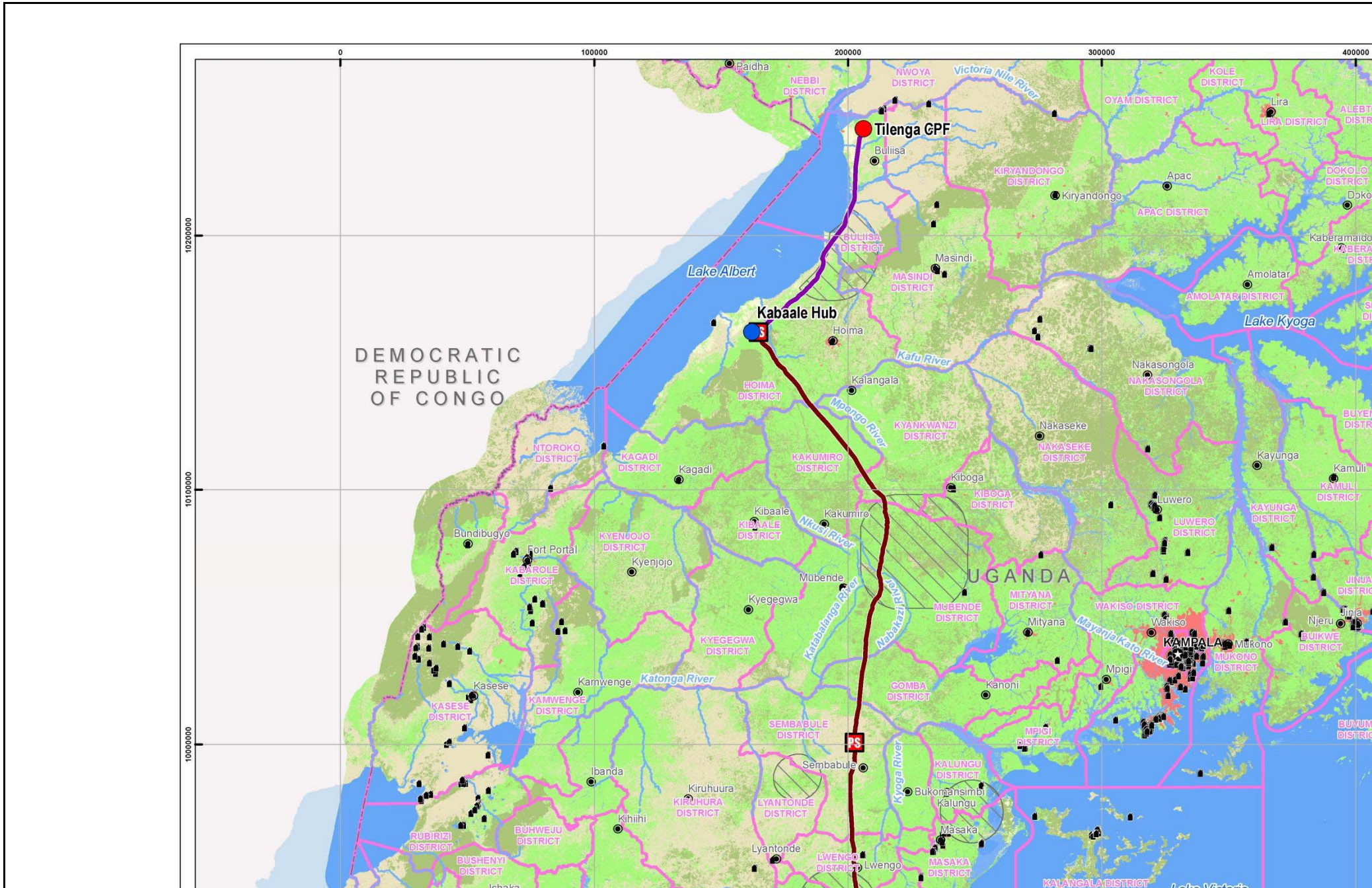
The main livelihoods in the AOI are agriculture, pastoralism, sedentary livestock farming, fishing, small businesses and tourism. Table 6.3-8 briefly describes the main livelihoods in each district. Figure 6.3–21 shows the principal types of land cover, including forest, grassland and cropland, found in Uganda and some reported active small-scale mining areas close to the Tilenga feeder pipeline and EACOP project.

Table 6.3-8 Main Livelihoods in Districts in the Projects' AOI

District	livelihoods
Buliisa	The district is 93.6% rural with most people being pastoralists, fisher-people or subsistence agriculturalists. In 2000–2010, a large amount of crude oil was found, hence the possibility of new employment opportunities and development prospects in the future (Buliisa District Local Government 2015).
Hoima	Hoima is 81.5% rural and the main sources of income are from farming such as food crops including sorghum, maize, millet, peas, groundnuts, sunflowers, sweet potatoes, beans, cotton, tea, coffee, tomatoes, cabbage, onions and tobacco as well as fishing. Fishing also employs a large number of people. (Hoima District Local Government 2015)

Table 6.3-8 Main Livelihoods in Districts in the Projects' AOI

District	livelihoods
Kakumiro	Agriculture is the major economic activity in the district, employing over 70% of the district. Major crops grown include maize, bananas, beans, rice, coffee, tea and cassava. Major livestock kept include cattle, goats, poultry, pigs and sheep. Other economic activities include trade especially in agricultural produce and finished products, leisure and hospitality. (Kakumiro District Local Government 2015)
Kyankwanzi	The district is 88.6% rural and the main economic activities are agriculture, livestock keeping, and logging and charcoal production. As the district is in a cattle corridor, many residents keep cattle and organise bimonthly trading centres. The main food crops for both cash and subsistence purposes are maize, common beans, groundnuts, upland rice of NERICA varieties, pineapples, tobacco, plantain, sweet potatoes, cassava, millet and sorghum. (Kyankwanzi District Local Government 2015)
Mubende	The district is 83.6% rural. The main economic activity in the district is agriculture, specifically producing mainly food crops such as sweet potatoes, beans, cassava, maize, bananas, groundnuts, onions, cabbage and tomatoes. The main cash crops are coffee and tea. (Mubende District Local Government 2015)
Gomba	The district is 92.2% rural and the main economic activity is livestock farming and subsistence agriculture. (Gomba District Local Government 2015)
Sembabule	The district is 93.3% rural and livestock farming, fish farming and dairy farming are the backbone of the region's economy. Crops grown include sweet potatoes, matoke, potatoes, cassava, yams, maize, millet, cabbage, peas, mangoes, pineapple, groundnuts and passion fruit (Sembabule District Local Government 2015).
Lwengo	The district is 84.4% rural and the main economic activities of the district are livestock farming, fisheries, and trade and pit sawing. (Lwengo District Local Government 2015)
Rakai	The district is 93.4% rural and the main economic activity is agriculture. Crops grown include maize, millet, sorghum, rice, beans, peas, groundnuts, simsim, soybean, cassava, sweet potatoes, potatoes, tomatoes, cabbage, eggplant, onion, banana, mangoes, orange, pineapple, coffee, cacao, cotton and tobacco. Livestock is also kept. (Rakai District Local Government 2015)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Mubende
MUBENDE DISTRICT
Kyegegwa
KYEGEGWA DISTRICT
MITYANA DISTRICT
Mityana
WAKISO DISTRICT
Wakiso
KAMPALA
Mukono
MUKONO DISTRICT
Njeru
BUIKWE DISTRICT
Jinja
Mpigi
GOMBA DISTRICT
Kanoni
MPIGI DISTRICT
Kasese
KASESE DISTRICT
Kamwenge
KAMWENGE DISTRICT
SEMBABULE DISTRICT
Sembabule
KALUNGU DISTRICT
Bukomansimbi
Kalungu
Ibanda
Kiruhuura
KIRUHURA DISTRICT
LYANTONDE DISTRICT
Kihiihi
RUBIRIZI DISTRICT
BUHWEJU DISTRICT
BUSHENYI DISTRICT
Masaka
Lyantonde
LWENGO DISTRICT
Lwengo
MASAKA DISTRICT
KALANGALA DISTRICT

Fisheries

The fishing industry makes an important contribution to the Ugandan economy and it grew by 5.1% in 2014. In the same year, fishing activities contributed 1.7% to national GDP (UBOS 2014). Lake Albert contributes significantly to Uganda's fish production and communities along the shore of the lake rely heavily on fishing to sustain their livelihoods. The proposed Tilenga feeder pipeline route is close Lake Albert in Hoima and Buliisa districts where many fishing communities occupy its shore. Figure 6.3–21 shows the principal watercourses and lakes in Uganda.

Ecosystem Services

Ecosystem services are defined as the benefits that people gain from the environment. They include:

- provisioning services: products obtained such as water, crops, livestock, wild food, biomass and other materials
- regulating services: value functions that ecosystems provide such as flood and erosion control, waste assimilation, carbon sequestration and water filtration
- cultural services: other nonmaterial human benefits such as recreation, sense of place and spiritual values
- supporting services: the natural processes that support the aforementioned ecosystem services, including photosynthesis and nutrient cycling.

It is important that ecosystem services upon which the projects depends and may affect be identified and managed appropriately as part of the project construction and operational phases. This is because many local people living in the projects AOI themselves depend upon and benefit from the full range of ecosystem services.

Table 6.3-9 lists the potential priority and semi-priority ecosystem services based on a literature review, site visits and professional judgement.

Table 6.3-9 Potential Priority and Semi-Priority Ecosystem Services

	Ecosystem Services Dependencies	Ecosystem Services Impacts
Potential priority ES	Crops (provisioning) Livestock (provisioning) Freshwater (provisioning) Erosion regulation (regulating)	Crops (provisioning) Livestock (provisioning) Capture fisheries (provisioning) Aquaculture (provisioning) Wild foods (provisioning) Timber and wood products (provisioning) Biomass fuel (provisioning) Freshwater (provisioning) Medicinal plants (provisioning) Local air quality regulation (regulating) Erosion regulation (regulating) Soil quality regulation (regulating) Pollination (regulating) Recreation and ecotourism (cultural) Spiritual, sacred and religious values (cultural) Ethical and biodiversity non-use values (cultural) Aesthetics, landscapes, views (cultural) Sense of place and way of life (cultural) Palaeontology and paleoarchaeology (cultural)
Potential semi-priority ES	Capture fisheries (provisioning) Aquaculture (provisioning) Biomass fuel (provisioning) Local air quality regulation (regulating) Local climate regulation (regulating) Recreation and ecotourism (cultural)	Fibre, resins (provisioning) Aggregates (provisioning) Global climate regulation (regulating) Local climate regulation (regulating) Water regulation (regulating) Pest and invasive species regulation (regulating) Navigation (cultural) Inspiration for culture, art and design (cultural) Cognitive development, education and research (cultural) Habitat and species support (supporting)

Recreation and Tourism

Uganda's tourism industry is growing with a total 1,196,765 tourists recorded in 2012, a 4% increase from 2011 (Ministry of Tourism, Wildlife and Antiquities 2013). Growth in visitor numbers has translated into economic benefits with hotels and restaurants increasing their contribution to the GDP in 2012 by approximately 20% over 2011 (Ministry of Tourism, Wildlife and Antiquities 2013).

Ecotourism especially has grown, contributing to the preservation of the national environment and maintenance of several national parks (Uganda Eco Tours 2011). The country now has 10 national parks, 3 UNESCO World Heritage Sites and a rich

diversity of wildlife. Ecotourism generates important social, economic and environmental benefits for tourism stakeholders and communities (Uganda Eco Tours 2011).

Buliisa District Local Government (2015) notes that tourism potential is high in Buliisa, because of the presence of the Murchison Falls National Park and Bugungu Wildlife Reserve. Hoima District Local Government (2015) also highlights high tourism potential in Hoima given its numerous tourism attractions and plans to improve local tourism attractions such as chimpanzee tracking, safaris, birdwatching, and historical and culture sites and monuments.

Human Rights

At the national level, there are NGO concerns about human rights violations of freedom of association, assembly and expression that occurred during the period preceding and following Uganda's 2016 presidential election (Human Rights Watch 2016). Certain sexual orientations may be subject to hostile attitudes.

Specific information was obtained from government documents (Hoima District Local Government 2015) that identify there are challenges in achieving international standards of human rights for all citizens. Underage children continue to be used in the agricultural sector and suffer sexual exploitation. Additionally, despite being criminalised by law, rape remains a serious problem throughout Hoima District and the criminal forensic capacity is lacking to collect evidence related to sexual assault, thereby hampering prosecution and conviction. Further documented human rights concerns (Mubende District Local Government 2015) include women not having equal rights to land and a lack of quality healthcare, educational institutions, access to clean water, decent shelter, and proper childcare.

Vulnerable Groups

Districts in the AOI are home to several vulnerable groups, defined as those who have very few or no productive assets, lack vocational skills, are sometimes isolated and excluded and lack guidance and social support. Vulnerable groups in project-affected districts may include orphans, the elderly, the landless, the disabled, school dropouts, those with little education, widowers, indigenous peoples, women, children, young people, HIV and AIDS patients, sex workers and those suffering from ill health.

Migration

Uganda has five neighbouring countries, many of which have experienced unstable political and economic conditions, causing population movements in and out of the country.

As a result, many residents with other nationalities are refugees who have fled to Uganda, driven by unstable political and economic conditions in their home countries. Refugees from neighbouring countries continue to cross Uganda's borders in large numbers; over 2800 people from South Sudan arrived in Uganda in March 2017 alone (The Guardian 2017). Uganda's refugee population is concentrated in refugee camps in the northern and western parts of the county. The pipeline intersects the districts in which some camps are situated. The Kyangwali

refugee camp, for example, is in Hoima District and accommodates over 20,000 refugees from South Sudan, Rwanda and Burundi (Action Africa Help 2017).

Internal migration in Uganda has been predominantly rural–urban owing to push factors such as population growth, rural poverty and landlessness, youth having limited or no access to productive resources, environmental conservation projects and natural disasters such as floods or droughts (IDMC 2014).

Recent emigration from Uganda is motivated primarily by economic pull factors in Organisation for Economic Co-operation and Development countries with Ugandans seeking employment in the United Kingdom, the United States and, increasingly, the Middle East (IOM 2015).

The Ministry of Foreign Affairs (MoFA) is mandated with overseeing the entry and stay of all persons, both residents and visitors, in the country. All aspects of migration are managed through the Diaspora Department in MOFA (AECOM 2015).

Ethnic Groups

Ethnic groups in the AOI include the Baganda, Banyoro, Bagungu, Alur, Banyankole and Bakiga. Besides these, several other ethnic groups are present in the study area as well as immigrants and refugees from the Democratic Republic of the Congo and Rwanda.

Indigenous Peoples

According to IFC Performance Standard 7 (IFC 2012), the term “indigenous people” refers to a distinct social and cultural group with the following characteristics in varying degrees:

- self-identification as members of a distinct indigenous cultural group and recognition of this identity by others
- collective attachment, i.e., whose identity as a group or community is linked, to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories
- customary cultural, economic, social or political institutions that are separate from those of the dominant society or culture
- an indigenous language, often different from the official language of the country or region in which they reside.

IFC Performance Standard 7 recognises that indigenous peoples may be more vulnerable to the adverse impacts of a project than other communities (or non-indigenous communities).

Ethnic groups in Uganda that may fulfil international definitions for indigenous peoples include the traditional hunter–gatherer Batwa and Benet communities and pastoralist groups such as the Ik and Karamojong. The projects are not on lands traditionally owned by, or under the customary use of any of these ethnic groups. Furthermore, the government does not officially recognise these groups as indigenous (ILO 2009). The Uganda Constitution refers to indigenous groups as vulnerable and marginalised, adopting the term “Vulnerable and Marginalised Groups” in place of “Indigenous Peoples” (Republic of Uganda 2015).

Community Safety, Security and Welfare

The 2014 Population and Housing Census indicated that serious crimes in Uganda have increased by 13% since 2013 (UBOS 2016). The most common serious crime reported was “defilement” or crime related to sexual acts, accounting for more than half of all serious crimes in 2014 (UBOS 2016).

There are high rates of road traffic accidents that affect community safety. The Ugandan Police Force recorded 18,495 road traffic accidents in 2015, more than half of which were classified as serious (UBOS 2016). At present, Uganda experiences road-traffic-accident deaths at a rate of 28.9 per 100,000 of the population (Balikuddembe et al. 2017) as compared to western Europe with an average of approximately 6 per 100,000. This places Uganda among the top-ranking countries for road traffic accidents alongside South Africa, Nigeria and Thailand (Balikuddembe et al. 2017).

Community Health

Life expectancy in Uganda at birth has increased by 13 years between 2002 and 2014, significantly higher than the average African regional increase of seven years over the same period (WHO 2015a). As of 2015, life expectancy at birth is 57 years for males and 61 years for females (World Bank 2015). However, there are marked inequalities in health status across the country, closely linked to underlying socio-economic, gender and geographical disparities (WHO 2015b).

Communicable diseases remain the single major contributor to the burden of disease in Uganda, although noncommunicable diseases and psychiatric conditions have been increasing of late. Neglected tropical diseases also remain a significant contributor, mainly affecting poorer communities in rural areas. According to statistics, HIV and AIDS is the leading cause of mortality in Uganda, accounting for 17.4% of all deaths in 2012, followed by lower respiratory infections (9.6%), malaria (5.6%) and diarrhoeal diseases (5.3%) (WHO 2015b). For more than a decade (2000 to 2012), the top four causes of mortality have remained unchanged in rank.

As indicated earlier there are marked variations in health status and this is reflected within the AOI where health performance indicators vary across districts. Life expectancy, for example, ranges from 63 years in Kakumiro to 44 years in Gomba. A discrepancy can also be observed in HIV prevalence rates: the HIV prevalence rate for Gomba is 11.7%, which is more than twice as high as Kakumiro’s rate of 5.2%.

Scoping Baseline Data Collected

During scoping, the baseline data collection for socio-economic and health conditions included a review of the following desktop resources:

- secondary data derived from academic journals, newspaper articles (national and international)
- national statistics (health, demographic, socio-economic)
- district development plans
- documents collected from national agencies.

GIS and satellite imagery used for routing and siting associated aboveground permanent and temporary facilities also provided socio-economic baseline data such as:

- location of communities
- infrastructure
- land use.

Field visits, including stakeholder engagement meetings, were undertaken (19 April–2 June) to gather local level socio-economic and health data. Observations were made of the environmental and socio-economic conditions of communities, such as infrastructure, and livelihood activities. The visits were undertaken by three teams; a health team and two stakeholder engagement teams. The meetings were carried out with national, district, subcounty and village level stakeholders who were asked semistructured questions based on the socio-economic and health VECs.

7 IMPACT IDENTIFICATION AND EVALUATION METHODOLOGIES

7.1 Introduction

This section includes:

- the impact assessment process
- VEC impact assessments that will be undertaken during the ESIA to identify and assess the potential significant impacts identified in Section 5
- other assessments.

7.2 Impacts Assessment Process

7.2.1 General Impact Assessment Process

The impact assessment of the Tilenga feeder pipeline and EACOP project on the physical, biological, socio-economic and health environment will be undertaken according to the NEMA EIA process that is described in Section 3.2.1 and on Figure 3.2-1, and to the requirements of:

- the Ugandan Environmental Impact Assessment Regulations,1998
- 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[21]
- IFC's environmental and social performance standards
- other relevant international standards and guidelines (see Section 3).

The ESIA will systematically characterise and assess each of the potentially significant impacts identified during scoping (Section 5.4). This will be an iterative process, repeated as the engineering becomes more defined and the project team develops and agrees mitigation (for negative impacts) and enhancement (for benefits) measures. The impact assessment will focus on the significance of residual impacts, i.e., the impacts that remain after mitigation measures have been implemented; see Section 7.2.2.2.

The ESIA will address impacts from both accidental and abnormal events. Accidental events may occur during critical unexpected situations with serious human, environmental or reputational consequences, potential material loss (e.g., compromised pipeline integrity) and external environment events affecting the project (e.g., landslides). Abnormal events are characterised by a temporary increase in the level of residual risk related to the operation of an installation.

[21] 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

7.2.2 Impact Assessment Elements

7.2.2.1 Valued Environmental and Social Components (VECs)

A preliminary list of VECs was identified during project screening and based on local knowledge of the project area. Input on VECs was sought from stakeholders during initial consultations. The VECs, listed in Appendix A and evaluated in the preliminary residual impacts assessment in Appendix E, will form the basis of the assessment of both project and cumulative impacts.

VECs are valued and have high sensitivity to project interactions by definition. For VECs that exhibit gradations of sensitivity, a ranking system will be used to describe their sensitivity. For VECs with standards and thresholds, for example, air quality, compliance to the standard or threshold may be used to establish magnitude, as mentioned below, or to inform significance directly.

Section 6.3 describes the existing baseline conditions for the VECs as identified during scoping. Based on this, additional baseline data requirements were identified, and the associated scopes of work are presented in the TOR (see Section 8.4). These descriptions will be expanded in the ESIA, as baseline information is collated from desktop reviews, field surveys and stakeholder engagement. The baseline descriptions will include:

- any historical or ongoing changes in condition that can be identified, including trends in condition
- any scientifically based predictions of future VEC condition and trends
- natural and social external influences and stressors (e.g., extreme climatic events, new settlements, in-migration of workers) that may affect VEC conditions.

7.2.2.2 Impact Significance

Potential impact significance of the proposed development on the existing environment and social conditions will be assessed by considering the following range of attributes.

- **Magnitude**: a measure of the degree of change from baseline conditions. Project-specific magnitude tables will be developed for each VEC and will consider the spatial (e.g., area affected) or population extent (e.g., proportion of the population or community affected) (see definition of area of influence in Section 6.2) of the impact. Impact extent will be quantified, where possible, and compared to relevant thresholds and standards. The magnitude of each impact, after implementing the proposed mitigation measures, will be ranked, for example, as negligible, small, medium or large.
- **Direction of change,** which may be:
  - **negative** – an adverse change from the baseline, or introduction of a new undesirable factor
  - **positive or beneficial** – an improvement to the baseline or introduction of a new desirable factor.
- **Frequency**: how often the impact is likely to occur. This is likely to range from very occasional (e.g., once or twice during construction) to very frequently (e.g., daily during certain activities).

- **Duration**: how long the impact will last. This may be described in terms of:
  - **time,** for example, hours, weeks, months or years
  - **project phases,** for example, throughout construction, during operations; a defined period after cessation of operations
  - **generations** of plants, animals or people.
- **Reversibility**: whether or not an impact is reversible or permanent (i.e., a VEC is not expected to return to its baseline condition).

7.2.2.3 Types of Impact

Impacts will be characterised further using the following descriptors:

- **direct (or primary)** – impacts that result from a direct interaction between a planned project activity and the receiving environment (e.g., between occupation of the pipeline corridor and pre-existing habitats)
- **indirect (or secondary)** – impacts that follow on from the primary interactions between the project and its environment because of subsequent interactions in the environment (e.g., loss of part of a habitat affects the viability of a species population over a wider area)
- **induced** – impacts that result from other activities that are encouraged to happen as a consequence of the project (e.g., new business set up to cater for increased traffic on roads)
- **transboundary** – impacts that extend or occur across a national boundary
- **cumulative** – those that result from the incremental impact, on areas or resources used or directly affected by the project, from other existing, planned or reasonably defined developments when the risks and impacts identification process is conducted (IFC PS1).

7.2.2.4 Mitigation and Enhancement Measures

Before the significance of potential impacts is determined, opportunities for enhancing beneficial effects will be explored and mitigation measures developed for adverse impacts. Mitigation and enhancement measures will be based on good international practice.

The following hierarchy of mitigation options will be applied to adverse impacts:

- avoid at source – remove the source of the impact
- abate at source – reduce the source of the impact
- attenuate – reduce the impact between the source and the VEC
- abate at the VEC – reduce the impact at the VEC
- remedy – correct the effect after it has occurred
- compensate or offset – replace in kind or with a different resource of equal or, in the case of critical habitat, better value, wherever technically and financially feasible.

It should be noted that compensation or offset does not automatically make an impact acceptable or negate the need to consider other forms of mitigation in the hierarchy.

The application of mitigation measures is an iterative process that will continue until an adverse impact is deemed as low as reasonably practicable.

7.2.3 Assessment of Cumulative Impacts

7.2.3.1 Overview

The ESIA will incorporate a cumulative impact assessment (CIA), which will be undertaken according to the Environmental Impact Assessment Regulations, 1998 and the IFC Good Practice Handbook on Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (August 2013).

Figure 7.2-1 summarises the IFC handbook's six-step iterative CIA process.

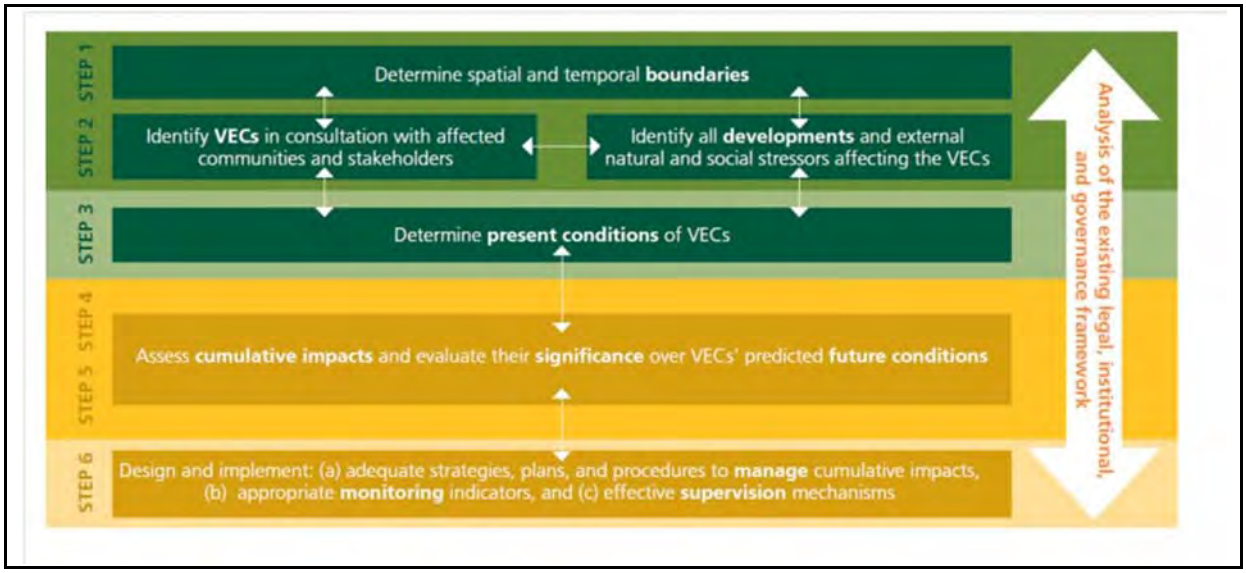

Figure 7.2-1 Cumulative Impact Assessment Process

The CIA will be an integral component of the ESIA. An analysis of the impacts of the EACOP and Tilenga projects on a VEC will be followed immediately by a discussion of cumulative impacts on the same VEC.

7.2.3.2 Spatial and Temporal Boundaries

A project area of influence (AOI) has been defined for each VEC during scoping (Section 6.2). These will be mapped and overlaid with the locations of associated facilities and other third-party projects. Using this information, AOIs will be defined for cumulative impacts, which are likely to be more extensive than the project AOIs. The CIA's spatial boundary will encompass the cumulative VEC AOIs.

Section 2.6 provides a schedule for project activities up to commissioning. The operational life of the EACOP and Tilenga systems will be 25 years, with decommissioning potentially taking place after this period. The duration of potentially significant cumulative residual impacts will be determined during the impact assessment and will define the temporal limits for each residual impact. Developments that do not have timescales overlapping those of the Tilenga feeder pipeline and EACOP project will be screened out of the CIA.

7.2.3.3 Identification of Other Developments with Potentially Cumulative Impacts

To assess cumulative impacts, it is necessary to identify other past, existing or planned activities within the spatial and temporal boundaries of the Tilenga feeder pipeline and EACOP project. This process, initiated during scoping, is ongoing. Section 2.2.6 identifies associated facilities; a list of third-party developments is in development and will be included in the ESIA. For inclusion in the CIA, projects should be reasonably predictable. For the EACOP and Tilenga ESIAs, this will be interpreted as projects for which either an ESIA has been submitted (and is publicly available) or for which consent has been given six months before submission of the ESIA (i.e., when the risks and impacts identification process is conducted).

7.2.3.4 Cumulative Impact Assessment, Management and Monitoring

The CIA will evaluate the projects' contribution to predicted cumulative impacts, focusing on those Tilenga feeder pipeline and EACOP project residual impact contribution that are potentially significant. Only residual impacts that are ranked as being of potential significance in the assessment of project effects will be considered in the CIA. In accordance with the IFC Performance Standards, the evaluation of cumulative impacts will be limited to those impacts recognised as important based on scientific concerns and concerns from affected communities. The assessment of significance will be based on limits of acceptable change or thresholds that will be defined in the ESIA. To the extent possible, these will be aligned with the magnitude tables that will be used for assessing significant project impacts.

The project team will work closely with the upstream projects, government agencies and other developers, where feasible, to derive appropriate mitigation and management and to monitor their implementation and success.

7.2.4 Transboundary Impact Assessment

The Transboundary Environmental Assessment Guidelines (2005), prepared by the East African Community, require transboundary assessment to be undertaken for shared resources that may be affected by a project.

For the Tilenga feeder pipeline and EACOP project, transboundary matters requiring assessment may include:

- greenhouse gas emissions
- chemical substances moved by river currents
- effects on species that move across boundaries (e.g., elephants)
- transboundary movement of cattle
- movement of labourers from other countries
- transboundary movement of water for hydrotesting.

The transboundary assessment will be integrated with the project and cumulative impacts assessments with a summary in a separate section. Any significant transboundary impacts that are identified will be discussed with the stakeholders of the relevant countries, as far as feasible.

7.2.5 Commitments Register

The ESIA will include a commitments register that details all proposed mitigation measures, including those for nonsignificant impacts that were scoped out of the ESIA. Every commitment will be carried through to an environmental or social management plan to facilitate implementation. Compliance with the commitments will be a key component of monitoring and audit protocols.

7.3 VEC Impacts Assessments

7.3.1 Biodiversity

The biodiversity VEC assessment will assess project impacts on:

- legally protected, national or internationally recognised areas
- habitats of conservation importance
- flora and fauna species of conservation importance.

The biodiversity impact assessment will be guided by the requirements of the Ugandan Environmental Impact Assessment Regulations 1998 as well as IFC PS6.

Assessment Method

The area of direct impact on protected and recognised sites, and habitats of conservation concern associated with construction of the pipeline, AGIs and temporary facilities (including right-of-way (RoW) clearing and trenching) will be calculated using a geographical information system (GIS). This will be presented as a proportion of the total area of the site or habitat affected. Potential indirect impacts of the project, such as habitat fragmentation and degradation or alteration of drainage patterns, will be assessed qualitatively and an overall indication regarding the risk to the integrity of the site or habitat will be determined.

Published information and project-specific survey data will be used to map likely species distribution based on habitat preferences. This is because detailed species accounts (including confirmed range and distribution) are not available for many of the species known or likely to occur within the AOI. Ecological-niche-factor analysis techniques will be used where sufficient eco-geographical data exists to do so. The analysis of potential direct impacts on species of conservation concern will then be based on these maps. As with protected sites and habitats of conservation concern, potential indirect impacts of the project, such as habitat avoidance and failure to breed in response to noise or artificial lighting, or introduction of invasive species, will be assessed qualitatively.

7.3.2 Physical Environment

7.3.2.1 Soils

The soils VEC assessment will assess project impacts on:

- soil resources including contamination within the soils AOI.

Assessment Method

Work to identify and predict impacts from project activities on soils will be conducted. In addition, the importance of soil resources to local communities and any important habitats will be considered. Based on these findings, a qualitative assessment of the impacts on soils will be established and a quantitative assessment of the associated areas impacted.

Both the degree and extent of soil contamination will be established and mapped for the project footprint.

7.3.2.2 Surface Water

The surface water VEC assessment will assess project impacts on:

- the stability of river channels
- water quality characteristics
- water for communities

Assessment Method

A drainage basin perspective will be adopted, as hydrological conditions and potential impacts assessed at aboveground installations (AGIs), camps, road and pipeline crossings are likely to be related to hydrological conditions in the catchment upstream and may have secondary effects on VECs downstream. The distance downstream that impacts are considered will vary depending on the distance (and travel time) to VECs such as communities with water supply or irrigation intakes and protected areas, wetlands, lakes and reservoirs.

The surface-water impact assessment of pipeline construction and operation will be qualitative to define baseline conditions or predict potential impacts. A quantitative risk assessment will be undertaken to evaluate the fate of oil spills and leaks to the soil, groundwater and surface water (see Section 7.4.2).

The assessment of the impact on surface waters of project requirements and of effluent discharges may be, to the extent possible, quantitative.

7.3.2.3 Groundwater

The groundwater VEC assessment will assess project impacts on:

- groundwater quality
- groundwater availability.

Assessment Method

The assessment will identify the relationship and connectivity of groundwater with surface water, biodiversity and local community requirements. This will include:

- further work to identify and predict specific potentially significant effects from project activities with the potential to deplete, divert or pollute groundwater or affect groundwater availability for other users. This will consider the sensitivity and importance of groundwater resources to local communities
- assessing surface water–groundwater interactions at river crossings to determine pollutant migration pathways, and identify and assess impacts to sensitive groundwater-dependent ecosystems (wetlands, bogs, springs)
- assessing the potentially significant hydrogeological impacts compared to the baseline.

The assessment of the impact of proposed groundwater supply abstractions on other users of groundwater and surface water will be quantitative. For sites where existing abstraction wells and other receptors have been identified, numerical groundwater models will be developed for abstraction locations using the baseline data collected. Hence, the groundwater resource and surface water–groundwater interaction will be estimated and potential impacts of abstraction on existing groundwater users assessed.

The groundwater impact assessment of pipeline construction and operation will be qualitative to define baseline conditions or predict potential impacts. A quantitative risk assessment will be undertaken to evaluate the fate of impacts from oil spills and leaks to the soil, groundwater and surface water (see Section 7.4.2.2).

7.3.2.4 Landscape

The landscape VEC assessment will assess project impacts on:

- on communities from permanent AGIs
- topography.

When the final Tilenga feeder pipeline and EACOP project route corridors and associated AGIs are established, the need for and scope for the landscape VEC will be evaluated.

Assessment Method

Most of the impacts on the landscape associated with the pipeline route and temporary sites are likely to be not significant, as the land will be reinstated. However, in some locations, there may be a need to blast rock or regrade slopes to construct the pipeline. At these locations, visual impact assessment may be required in proportion to the scale of likely change to the landscape and proximity to communities.

The assessment will therefore only take factors that confer value on landscapes into account. This may include areas of recognised biodiversity such as national parks and forest reserves, cultural or heritage value areas of noted recreational value and landscapes valued for their perceptual qualities, such as wildness, tranquillity and natural beauty.

The sensitivity of visual receptors (e.g., the people living in the area) will also be taken into account.

7.3.2.5 Air Quality and Climate Change

Air Quality

The air quality VEC assessment will assess project impacts on:

- local air quality at receptor locations.

Assessment Method

Quantitative assessment of operational air emissions will be undertaken using emission dispersion modelling of key emission sources for the two EACOP project pumping stations. This will involve collating operational data for the air emission sources associated with the pumping stations including combustion and fugitive emissions, and preparing emissions inventories for a range of operational scenarios representative of typical long-term average and maximum short-term cases, e.g., peak production or upset operational states that result in higher emissions. The inventory will include local air quality constituents as well as greenhouse gas emissions.

The AERMOD dispersion model developed by the United States Environmental Protection Agency is proposed for the quantitative assessment. The modelling will consider the effects of topography and be based on five years of hourly sequential meteorological data recorded at Eldoret International airport in Kenya. This is the closest meteorological station to the two pumping stations for which a full five-year record of data in the appropriate format is available.

A qualitative assessment of impacts of dust associated with all the projects' construction activities will be conducted. The assessment will refer to widely used international guidance, including *Guidance on the assessment of dust from demolition and construction* (UK Institute of Air Quality Management 2014).

Climate Change

The projects' greenhouse gas (GHG) emissions from project equipment will be quantified. The total project contribution will be compared to the national GHG contributions.

7.3.2.6 Acoustic Environment

The acoustic environment VEC assessment will assess construction and operational project impacts on:

- receptors, such as habitations, protected areas and biodiversity areas.

Assessment Method

The acoustic environment assessment will use both quantitative methods and qualitative methods, based on noise modelling, appropriate to the noise source, presence of receptors and predicted duration of predicted noise levels resulting from project activities.

This includes the identification of:

- activities that have the potential to generate noise or vibration that could be discernible beyond the project boundary
- locations where noise levels are likely to exceed project standards (habitations, protected areas and areas of sensitive fauna).

Quantitative noise modelling of fixed operational noise sources would be undertaken using computational noise modelling software (SoundPlan 7.4 or CadnaA). Operational noise predictions will be based on either International Standard ISO 9613:-2:1996 'Attenuation of sound during propagation outdoors – general method of calculation', or the CONCAWE method. Both methods provide a general method for the prediction of noise levels in the community from sources of known sound emission. The modelled noise source(s) may be moving or stationary and the method considers the major mechanisms of noise attenuation.

7.3.3 Archaeology and Cultural Heritage

The archaeology and cultural heritage VEC assessment will assess project impacts on:

- archaeology
- cultural heritage.

Assessment Method

The impact assessment will consider direct physical effects arising during the initial pipeline RoW clearing and construction work for AGIs and temporary facilities and changes to the setting of archaeological assets and cultural heritage. Their importance (both tangible and intangible) will be determined according to criteria derived from International Council on Monuments and Sites methodology (ICOMOS 2011. The Uganda Department of Museums and Monuments will be engaged to discuss findings and mitigation.

7.3.4 Socio-economic and Health

The socio-economic and health VEC assessment will assess project impacts on:

- socio-economic and health receptors

Based on the scoping results a number of potential beneficial and adverse impacts were identified for further evaluation and assessment, as described below.

The impact assessment will be based on best practice guidance on methodology:

- Social Impact Assessment: Guidance for assessing and managing the social impacts of projects (IAIA 2015)
- Good practice guidance on health impact assessment (ICMM 2015).

Demographics

The assessment addresses influx and associated impacts.

Economy and Living Standards

The assessment addresses:

- direct, indirect and induced economic impacts
- increased state revenue, investment in the economy
- potential increases in local tax revenues, which could have positive effects on local public services
- community investment provision
- the potential for opening new markets for local products and services
- increased accessibility to goods and services
- business development opportunities
- the monetisation of remote rural economies, thus improving purchasing power and increasing trade
- increased economic vulnerability for marginal groups such as women, the elderly and ethnic minorities
- the boom-and-bust cycle associated with temporary construction employment
- increased cost of living (inflation)
- competition for economic resources and employment
- the potential for increased political power in the local area.

Infrastructure

The assessment addresses:

- project improvements of infrastructure
- potential stress on existing infrastructure and services owing to influx and project needs.

Land and Property

The assessment addresses:

- loss of land and replacement land
- creation of land markets leading to changes in traditional land tenure systems
- unplanned and uncontrolled development of squatter settlements
- pressure on land
- land conflicts.

Land-based Livelihoods

The assessment addresses:

- changes to traditional livelihood practices (farming, fishing, livestock)
- changes to livestock numbers due to changing work practices
- decreased agricultural activities and related income due to changing work practices
- changes in livelihoods and natural resource use
- increased consumption of natural resources due to influx.

Fisheries

The assessment addresses impacts on fisheries-based subsistence livelihoods and fisheries businesses.

Recreation and Tourism

The assessment addresses:

- impacts on recreation and tourism.

Community Safety, Security and Welfare

The assessment addresses:

- community safety and security
- increased incidence of social ills, including alcoholism, drug abuse, prostitution and gambling
- increase in domestic violence
- increase in criminality
- increased tension, disputes and conflicts between locals and migrants concerning natural resources, employment opportunities and other project benefits
- possible marginalisation of women, minorities and other vulnerable groups
- changes in power relationships, including undermining and changing of leadership and traditional authority structures.

Workforce

The assessment addresses:

- the local skills base
- the local labour pool
- improved local wage and income levels
- ability to afford welfare
- income disparities
- wealth accumulation and opportunities
- occupational health
- project working conditions.

Community Health

The assessment addresses:

- potential increases in human diseases (vector-related diseases, communicable diseases, noncommunicable diseases, sexually transmitted diseases, soil- and water-borne diseases, hazardous materials, accidents)
- health facilities and services capacity
- gender and vulnerable groups differences
- traffic increase
- effects of noise, water and air emissions
- zoonotic diseases.

Traffic

The traffic VEC assessment will assess project impacts on:

- existing traffic conditions
- the existing road network
- road safety.

Assessment Method

A traffic assessment will be undertaken for project construction and operation activities on the roads that will be used to transport equipment, materials and workers to temporary and permanent facilities. The traffic assessment will consider the impacts on existing roads and the impact of new access roads and road improvements proposed by the projects.

The traffic assessment will:

- identify the project activities that will lead to the generation of traffic during construction, associated with construction areas, pipe yards and camps, and operation of the permanent facilities
- predict projected traffic volumes from the project
- compare predicted traffic volumes to existing traffic volumes and road capacity using information from the traffic survey described in Section 8.4.

The traffic assessment will include beneficial and adverse effects and any indirect impacts of improved access.

7.4 Other Assessments

7.4.1 Ecosystem Services

An ecosystem services assessment will be undertaken to ensure key ecosystem service impacts and dependencies are taken into account. The purpose of the assessment is to identify and reduce risks and to maximise opportunities for both the projects and affected communities.

The impact assessments undertaken for each VEC in Section 7.3 will include an assessment of the potential priority and secondary-priority ecosystem services associated with them, as identified in Section 6.3, Table 6.3-9. Guided by the IFC PS6 approach, the ecosystem services assessments will identify the importance of each ecosystem service in the AOI, determine the nature and extent of any impact, consider who the affected stakeholders are and establish what influence the projects have on the ecosystem service.

7.4.2 Accidental Events Risk Assessment

A risk assessment will be conducted to assess the potential impacts from accidental events to inform pipeline route selection and emergency response procedures.

7.4.2.1 Qualitative Risk Assessment

A risk assessment of oil spills will be undertaken and comprise an overall qualitative assessment of environmental and social risks for the pipeline routes, followed by

more detailed quantitative fate and transport modelling of risks posed at specific highly sensitive locations. The risk assessment will be used to calculate a numerical ranking of relative sensitivity and risk to inform pipeline route selection and emergency response procedures.

A qualitative model framework will be developed to assess risks posed to all key potential receptors (surface water, groundwater, human health, biodiversity and land use) from potential oil release along the pipeline routes. The model framework is based on the assessment of risk using the source–pathway–receptor approach.

Initially, the risk assessment model will be used to undertake a sensitivity screening assessment for the pipelines based on 10-km-long pipeline sections. Higher sensitivity areas will be evaluated on a 1-km pipeline basis using the risk assessment model and data specific to the areas associated with each 1-km pipeline section.

7.4.2.2 Quantitative Risk Assessment

Quantitative risk assessment will be undertaken in selected locations or areas where the risks associated with oil release to either surface water or sensitive groundwater aquifers are high for the Tilenga feeder pipeline and EACOP project. Risk-based corrective action (RBCA) fate and transport modelling (or other commonly used models) will be undertaken to:

- quantify potential risks to key receptors
- provide a temporal assessment of risk, for example, the length of time over which drinking water standards might be exceeded.

For a representative number of locations for sensitive surface water crossings, RBCA modelling will be undertaken of dissolved-phase oil migration in the ground, laterally to surface water receptors (base-flow contribution) and vertically to groundwater aquifers.

Based on information gathered during the scoping stage, the number of rivers and aquifers to be modelled is considered adequate. These will be reviewed in the light of the environmental risk assessment and during the course of the ESIA.

7.5 ESIA Project Team

The ESIA project team comprises the EACOP Pipeline Project Team (PPT), representatives from the FEED team, and a team of international and Ugandan environmental and socio-economic consultants, RSK Environment Ltd (RSK) and Eco & Partner Consult. Both comprise experts, some of whom have been, or are in the process of being, duly certified and approved according to the provisions of Section 11 of the Environmental Impact Regulation, 1998.

The ESIA project team is further described in Section 8.9 ESIA Experts and the proposed team members, with their respective roles and their curricula vitae (CVs), are presented in Appendix F.

8 TERMS OF REFERENCE

8.1 Background

The development of the ESIA terms of reference (ToR) is one of the main outcomes of the scoping exercise. The Environmental Impact Assessment Regulations, 1998 state: “The ToR shall include all matters to be included in the environmental impact statement”. This ToR provides guidance for the preparation of the ESIA so it can be conducted in a focused manner and based on the preliminary project impacts and stakeholder concerns included in the scoping report. In addition, this ToR demonstrates that the required expertise to undertake the ESIA is available.

The ToR presented in this section is based on guidance included in the Environmental Impact Assessment Guidelines for the Energy Sector, 2004 and the ToR content requirements included in the Environmental and Social Impact Assessment Guidelines for the Energy Sector in Uganda, 2014. The ToR includes:

- objective
- result of scoping findings
- scope of work
- methodology
- schedule
- ESIA table of contents
- management plans
- ESIA experts.

The ToR is informed by the findings of the scoping report, specifically:

- Section 4, which provides stakeholder concerns at the national and local level
- Section 5, which describes the key potential environmental and social impacts during the scoping based on which an impacts assessment table has been developed that lists the proposed high-level mitigation measures and identifies the residual impacts that require further evaluation during the preparation of the ESIA
- Section 6, which describes the existing baseline conditions in the AOI and scoping baseline data collection sources
- Section 7, which outlines the process for identifying and prioritising VECs, and describes the impact assessment process that will be used and the criteria used for assessing project and cumulative impact significance.

8.2 Objective

The objective of the ESIA ToR is to:

- provide the scope of work for collection of new baseline data
- guide stakeholder engagement
- establish the method for assessing project, cumulative and transboundary impacts.

8.3 Results of Scoping Findings

8.3.1 Introduction

This section summarises the findings of the scoping study, namely:

- stakeholder concerns with regards to the projects development raised during stakeholder engagement activities (see summary in Appendix C and full list in Appendix D)
- preliminary understanding of the existing environmental and socio-economic conditions for the Tilenga feeder pipeline and EACOP project identified throughout the scoping study (see Section 6 for full description)
- beneficial and potentially significant adverse residual impacts (i.e., the impacts anticipated after mitigation) on VECs (summarised from Section 5, Table 5.5-1).

These findings inform the ESIA scope of work described in Section 8.4. Specific mitigation measures will be defined during the development of the ESIA for those impacts identified as being potentially significant during the scoping phase.

8.3.2 Stakeholder Concerns

Key scoping stakeholder concerns are summarised below.

8.3.2.1 Land and Property

The potential impacts of the projects on land and property were among the leading concerns of stakeholders throughout scoping phase engagement. Questions surrounding compensation for effects on land, properties and livelihoods were raised repeatedly during meetings at the district, subcounty and village level. Emphasis was placed on the shortage of replacement land, land speculation, potential conflict between owners and tenants and whether land take would be temporary or permanent.

8.3.2.2 Influx

The influx of construction workers and presence of workers in construction camps was a major cause of concern for stakeholders, particularly at the national and regional level. Negative perceptions associated with construction workers were widespread such as the potential victimisation of women and girls by construction workers, an increase in HIV and AIDS rates, family breakdowns and the potential for a reduction in access to water, electricity and healthcare.

8.3.2.3 Economy and Standard of Living

Stakeholders expressed an interest in the potential benefits associated with the projects, particularly in terms of the employment and training opportunities and the procurement of goods and services. Emphasis was placed on ensuring that local people are given priority in the context of employment opportunities. At the community level, some stakeholders questioned whether the projects could benefit them due to their lack of construction skills and experience.

8.3.2.4 Community Health and Safety

All stakeholder categories raised the issue of community health and safety with the main areas of concern being the effect that the heated pipelines could have on people, animals, soils and crops. Road safety and potential accidents were also causes of concern.

8.3.2.5 Physical Environment and Biodiversity

Concerns about the negative impact of the projects on the physical environment and biodiversity were conveyed in numerous meetings. Many stakeholders were concerned about compromising the supply of water and some stakeholders expressed concerns regarding the effects on air quality and climate change. Some stakeholders expressed concerns about the effects of the projects on biodiversity and the effects on Lake Albert fisheries.

8.3.2.6 Stakeholder Engagement

Stakeholders demonstrated an interest in the grievance mechanism, the role of community liaison officers and feedback mechanisms to the projects.

8.3.3 Biodiversity

The Tilenga feeder pipeline and the first 50 km of the EACOP project traverse areas of high biodiversity value and include several areas that are recognised internationally for their biodiversity value at the landscape scale. However, the majority of the 391 km of the combined projects' route corridor, including from KP50 to the Uganda–Tanzania border, is within an area of lower biodiversity significance.

The projects' route was selected to avoid the most significant areas of biodiversity (e.g., World Heritage Sites, national parks and Ramsar wetlands). The Uganda Wildlife Authority (UWA) has confirmed that the proposed Tilenga feeder pipeline route corridor is within the Bugungu Wildlife Reserve (also an important bird area (IBA) and key biodiversity area (KBA)). The route is adjacent to two Forest Reserves (Maseege and Bujawe) and Lake Albert (also a KBA). The EACOP project corridor is within the Taala and Wambabya Forest Reserves, and adjacent to the Kasana-Kasambya, Bugoma (also a KBA), and Lwengo Forest Reserves. Forest Reserves may be designated for harvesting timber, replanting and biodiversity conservation. Parts of the pipeline routes may also be critical habitat under IFC PS6 based on the presence of species of conservation concern.

Natural habitat (in accordance with the IFC PS6 definition) occurs outside protected areas, notably Papyrus and Carex dominated wetlands around rivers and the Lake Albert shore and grassland and scrubland along the escarpment above Lake Albert and southwest of Bugungu Wildlife Reserve.

Elsewhere along the pipeline routes, habitats are degraded, with high levels of anthropogenic influence (cultivation, grazing and charcoal production). Despite this, the pipeline routes are known, or are likely, to support a large number of species of conservation concern, some of which could trigger critical habitat under IFC PS6.

Existing literature sources suggest that several notable or threatened species of amphibians, birds, terrestrial and aquatic mammals, as well as endemic species of

fish and plants are found in the AOI. In addition, many migratory species have migration routes that cross the Tilenga feeder pipeline and EACOP project AOIs. A review of secondary data sources has identified active chimpanzee populations within the AOI of the Tilenga feeder pipeline and the first part of the EACOP project.

Potentially significant impacts on biodiversity identified during scoping that will be assessed during the ESIA include:

- loss, conversion, degradation or fragmentation of habitat due to land clearance, trenching and construction of access roads
- disruption to movement of wildlife
- disturbance to wildlife from noise, light, odour and dust associated with presence of construction machinery and vehicles
- effects on aquatic and riparian habitats as a result of construction of open-cut watercourse crossings
- increased hunting, poaching and collection of natural resources, e.g., timber, plants as a result of facilitated access via pipeline access tracks.

8.3.4 Physical Environment

8.3.4.1 Surface Water

The Tilenga feeder pipeline route crosses several minor permanent and ephemeral watercourses, all of which flow into Lake Albert. The Ugandan section of the EACOP project begins in the Lake Albert basin, crosses part of the Victoria Nile basin and continues south into the Lake Victoria basin, crossing several major and minor permanent and ephemeral watercourses and wetlands. Surface water quality in the AOI is likely to be affected by agricultural activities and settlements upstream. Permanent and ephemeral watercourses are used for agricultural and domestic purposes.

Potentially significant impacts on surface water identified during scoping that will be assessed during the ESIA include:

- depletion of stream flow, competition for water resources due to project water abstraction during construction and operation
- impacts on surface water quality resulting from accidental release of oil or chemicals due to leaks, spills, accidental or intentional damage.

8.3.4.2 Groundwater

The Tilenga feeder pipeline and EACOP project routes traverse areas that are characterised by unconsolidated fluvial, sedimentary and basement aquifers. Groundwater is known to maintain baseflow to rivers, lakes and wetlands in several areas of the project AOI. Groundwater quality in the projects' AOI is generally good, although high concentrations of iron and manganese are common in the crystalline basement aquifers present in the AOI, and microbial contamination related to faecal waste has been observed in shallow urban aquifers.

Potentially significant impacts on groundwater identified during scoping that will be assessed during the ESIA include:

- depletion of community water sources as a result of project water abstraction during construction and operation
- impacts on groundwater quality resulting from accidental release of oil or chemicals due to leaks, spills, accidental or intentional damage.

8.3.4.3 Soils

Various types of soils are encountered along the Tilenga feeder pipeline and EACOP routes. Soils encountered are of low to medium productivity, supporting grazing, cotton, coffee, tobacco and food crops growing. Waste disposal near settlements and mismanagement of agricultural chemicals are likely to be the main sources of soil contamination in the areas traversed by the pipelines.

Potentially significant impacts on soils identified during scoping that will be assessed during the ESIA include:

- impacts on soil quality resulting from accidental release of oil or chemicals due to leaks, spills, accidental or intentional damage to the pipeline
- soil erosion or loss from poorly functioning or damaged erosion control structures along the pipeline routes, including at the banks of watercourses crossed using the open-cut method.

8.3.4.4 Landscape

The topography traversed by the first half of the Tilenga feeder pipeline is predominantly flat to gently rolling terrain and the second half is hillier. The Kabaale Hub is planned to be on a slightly exposed and elevated area of the rift escarpment. The EACOP project route corridor would traverse gently undulating grass and farmland, hills with open plateaus and bare rocky outcrops, open grassland, wetlands and, near the border with Tanzania, a drier, more sparsely vegetated level landscape.

Potentially significant impacts on visual and landscape impacts identified during scoping that will be assessed during the ESIA include:

- visual intrusion from construction activity, including lighting
- effects on landscape and visual amenity due to changes to topography.

8.3.4.5 Air Quality and Climate Change

Air quality in the Tilenga feeder pipeline and EACOP project AOI is likely to be relatively good because of the rural and semirural nature of the study area. The most significant existing impact on air quality is likely to come from domestic and agricultural activities (e.g., seasonal burning of vegetation at the start of the farming season). It is anticipated that concentrations of NO_2, particulate matter and other key air pollutants will be present at higher concentrations in industrial areas than in rural areas.

Over the last 50 years, the average annual temperature has increased by 1.3°C in Uganda, while annual rainfall has been decreasing. This trend is likely to continue in the future.

The scoping study identified that potentially significant impacts on air quality could be associated with dust originating from construction sites, access tracks and

material sourcing activities such as aggregate extraction and borrow pits. During operations, emissions will be generated by the aboveground installations (AGIs).

8.3.4.6 Acoustic Environment

The acoustic environment for the Tilenga feeder pipeline and EACOP project is dominated by wildlife and weather sounds in areas away from human activity. In populated areas, human activity will be the dominant source of noise but this level may be exceeded by traffic noise closer to roads.

The potentially significant impacts on the acoustic environment that could result in disturbance to communities and wildlife will be associated with construction and decommissioning activities, such as the movement of project vehicles, operation of machinery, trench blasting, construction of crossings, and material sourcing, e.g., extraction of aggregates.

8.3.4.7 Socio-economic and Health

The Tilenga feeder pipeline and EACOP project will traverse near, and through, a range of towns, villages and communities that have a diversity of ethnic groups. In rural areas, the majority of the population concentrates along national and secondary roads with villages often having a central trading place in which main business and social activities take place. The main livelihoods in the AOI are based on agriculture, pastoralism, sedentary livestock farming, fishing, small businesses and tourism.

Potentially beneficial and significant adverse impacts on socio-economics and health identified during scoping that will be assessed during the ESIA include:

- benefits to economy and standard of living from project employment, skills development, enhanced local economy and therefore purchasing power
- local inflation and unmet expectations with regard to business opportunities
- downsizing the workforce at the end of construction
- benefit from project-induced road improvements
- disruption to traffic and railroads due to construction activity and during construction of crossings
- pressure on local infrastructure and services due to influx and presence of construction workforce
- benefit from better access to health care and other physical resources facilitated by the new and upgraded project roads
- spread of communicable diseases due to construction workforce
- effects on land and property and land-based livelihoods
- increase in land prices
- effects on social cohesion and conduct, for example due to increased income and compensation payments
- during trenching, disruption of movement of livestock and access to land and resources (e.g., water; restrictions on fishing and hunting)
- benefits to recreation and ecotourism from improved access to attractions
- reduction in appeal of tourist activities

- community safety, security and welfare, for example increased risk of traffic and other accidents, conflicts with construction workforce, increased access to remote communities, influx
- alterations to demographics.

8.3.4.8 Archaeology and Cultural Heritage

To date, no archaeological and cultural heritage assets have been identified within the projects' AOI. Thirteen features were identified within 1 km of the AOI and 111 are within 20 km of the AOI. These known sites in the surrounding area provide an indication of the types of unrecorded archaeological and cultural heritage asset which may be encountered within the AOI, and include features from colonial and Iron Age periods, palaeontological fossiliferous beds and stone tools. The scoping study has also identified intangible cultural heritage assets that include ritual trees, caves, drumming stones and wells.

Potentially beneficial and significant adverse impacts on archaeology and cultural heritage identified during scoping that will be assessed during the ESIA include:

- benefits in expanding cultural heritage knowledge due to chance finds discoveries and excavations
- disturbance or accidental damage of cultural heritage and chance finds
- increased disturbance to cultural heritage sites from enhanced access.

8.4 Scope of Work

The ESIA scope of work includes baseline data collection, development of mitigation measures, and assessment of project impact on VECs. This section focuses on the baseline data collection. An indicative field sampling programme is presented in Table 8.4-1. The development of mitigation measures will be undertaken for each VEC as required. The impact assessment method described in Section 8.5 will be applied to each VEC. Stakeholder engagement will inform the scope of work and will continue throughout the preparation of the ESIA.

Table 8.4-1 Indicative Field Sampling Programme

VEC	Activity Proposed	Number of Locations	Time or Duration if Applicable	Notes
Biodiversity				
No specific numbers identified for surveys.				
Physical Environment				
Groundwater	Field baseline survey (groundwater monitoring wells – Tilenga feeder pipeline)	10 geotechnical wells + maximum of 5 local wells if possible		
Groundwater	Field baseline survey (groundwater monitoring wells – EACOP project)	28 geotechnical boreholes between KP0 and KP296 + community wells		One sample from each geotechnical well, maximum of 10 samples from each community wells
Surface water	Field baseline survey (surface water and water quality – Tilenga feeder pipeline)	Key (perennial) watercourse crossings (4)		Waiga River Waisoke River Sonso River Waki River Two rounds of sampling – high and low flow to account for seasonal variability
Surface water	Field baseline survey (surface water and water quality – EACOP project)	Key (perennial) watercourse crossings (4)		Nkusi–Kafu River Katonga River Kibale River Jemakuriya River Two rounds of sampling – high and low flow to account for seasonal variability

Table 8.4-1 Indicative Field Sampling Programme

VEC	Activity Proposed	Number of Locations	Time or Duration if Applicable	Notes
Acoustics	Field baseline survey	Closest receptor(s) (up to 2) to each AGI and temporary facilities	Day, evening and night time measurements	
		Tilenga feeder pipeline – 7 locations EACOP project –25 locations	Daytime only	Receptors along the route
Air quality	Field baseline survey	2 targeted locations	24 weeks total	First location is expected to be near to the Kabaale Hub where PS1 will be located Second baseline air quality monitoring site will be selected to be close to PS2
Cultural Heritage				
Cultural heritage	Field survey	50	N/A	

Table 8.4-1 Indicative Field Sampling Programme

VEC	Activity Proposed	Number of Locations	Time or Duration if Applicable	Notes
Socio-economic and Health				
Traffic	Baseline field survey (vehicular and pedestrian movements)	6	12 hour	Tilenga feeder pipeline: at locations on the main road or at a junction at Biso and Hoima EACOP project: at locations on the main road at the (four) junctions in Masaka, Mubende, Kitenga and Kyotera
Traffic	Baseline field survey (traffic conditions where construction traffic must drive through town or village)	2 (Tilenga feeder pipeline) + 8 (EACOP project)	One day	Tilenga feeder pipeline: two one-day surveys at two locations on routes to the construction camp and pipe yard (MCPY) EACOP project: eight one-day surveys at four locations (two surveys per location) on the main routes to the construction camps, pipe storage yards and coating facility
Socio-economic and Health	Baseline field survey	20 villages adjacent to Tilenga feeder pipeline + 40 villages adjacent to EACOP project	N/A	Social baseline will sample communities so they are representative of the entire study area

8.4.1 Biodiversity

8.4.1.1 Scope of Work

The scope of work for biodiversity will be to:

- collect baseline information for the AOI
- determine sensitivity and importance of biodiversity VECs, including areas of natural and critical habitat, that may be directly or indirectly affected by the project
- assess project residual impacts on biodiversity using the methods described in Section 7.2 Impact Assessment Process and in Section 7.3.1 Biodiversity Impact Assessment.

8.4.1.2 Baseline Data Collection

The review of existing baseline data, collected through a desktop study and the site visit as described in Section 6.3, identified that additional data collection is required to provide an understanding from which potential impacts can be assessed. It is recognised that during the baseline data collection exercise described below, the need to collect additional data may be identified. The following sections describe the additional surveys proposed to collect biodiversity data.

Desk-Based Baseline Study

In addition to the general data sources listed in Section 6.3, desk-based baseline data collection will include consulting a wide range of sources.

Habitats and Flora

Baseline data collection will include consultation with the national herbarium of Uganda, as well as the Oxford University, UK, herbarium which is known to contain a wide range of historical literature on the area and holds a considerable collection of flora specimens from Uganda.

Terrestrial Fauna

Baseline data collection will include a review of all publicly available action plans for species or groups of conservation concern, such as the Strategic Action Plan for Large Carnivore Conservation in Uganda (UWA 2010).

Habitat suitability maps for the Tilenga feeder pipeline and EACOP project and AGIs are being produced through a combination of desk-based research, remote sensing data and detailed field surveys. Each of the mapped habitat types will be assessed for their potential to support important vertebrate and invertebrate species. For some species such as chimpanzees, the availability of eco-geographical data may enable more detailed species distribution modelling, such as Ecological Niche Factor Analysis to predict species distributions in the AOI.

Avifauna

Additional baseline data will be collected including:

- Wetlands International's waterbird population estimates

- consultation with BirdLife International regarding information on the East Asia–East Africa Flyway, within the AOI.

Aquatic and Riparian Habitats

Baseline data collection will include Fishbase online database searches.

Field Baseline Survey

Data collection activities follow the Good Practices for the Collection of Biodiversity Baseline Data (Gullison et al. 2015).

Habitats and Flora

The Rapid Botanical Survey (RBS) protocol developed by Oxford University is used to sample species-rich vegetation (Hawthorne and Marshall 2016). This method allows a bioquality index to be determined, which can be used to assess an area of vegetation in its local context (e.g., compared to other sites in the AOI) as well as in the regional, national and continental contexts (e.g., using existing datasets and species lists).

RBS methodology allows a consistent set of phytosociological maps and indices to be developed. Data for the canopy tree count (where applicable) and the full species list, including abundance scores, will allow similarities and differences in vegetation to be compared. Based on the occurrence of key species (which include endemic and endangered species), a preliminary classification of natural and modified habitats will be made as defined in IFC PS6.

The method makes extensive use of specimens collected during fieldwork that are then used to enhance national herbarium collections benefitting the national knowledge base. It also provides an excellent opportunity to train Ugandan botanists and engage communities with assessment of local vegetation.

The survey will include, and train, Ugandan teams in implementing the RBS method. The objective is to conduct initial training expedition of the RBS method to local field teams. Subsequently, these teams would carry out the remaining survey data collection.

The RBS method also lends itself to record social and cultural uses of plants (ecosystem services). Individuals from target communities will accompany the botanical team on surveys to provide local names, and uses and importance.

The detailed botanical survey method will also identify the abundance of alien invasive plant species at each sample location. Combined with the ground-truthing data and the remote-sensing results, detailed maps and risk analysis can be carried out to assess the risk of spread or introduction of alien invasive species and to develop management plans to reduce the risk.

Terrestrial Fauna

Additional baseline data will be collected using a range of techniques that are described below.

Walked transects: Transect surveys will be undertaken, at locations identified through the habitat assessment (biased toward areas of most suitable habitat), to

inform decisions on the likelihood of species presence or absence and to confirm species presence where possible. Transects will be of sufficient length (1–2 km) and number to cover the area of interest and allow the collection of a representative data sample. Each transect length will be determined through a review of remote sensing data and through consultation with local specialists. In addition, transects will provide sufficient information for the AOI.

Ad hoc observations: On the way to transect start points, animals and habitats observed within the AOI will be recorded.

Night-time surveys: Night-time surveys will be used, where considered safe, to detect nocturnal species. Night-time surveys combine the use of torches and sound recordings to identify animals. Additionally for bats, a combination of mist netting near watercourses and along woodland tracks and edges and a bat detector will be used.

Camera trapping: Camera traps will be used in areas where nocturnal or cryptic species are predicted but where no evidence is recorded during transect surveys. The traps will be deployed for a minimum of three weeks.

Movement corridors: Sections of the projects' route that may serve as a movement corridors for animals will be targeted for habitat assessment and transect surveys. Where the route crosses a feature such as a watercourse, transects will be undertaken along the watercourse for at least 200 m upstream and downstream. The physical attributes of the watercourse and riparian habitats will be recorded during the surveys, as well as the potential for species to use the features for movements, shelter or feeding. Identification of potentially important movement corridors will be achieved through a combination of aerial imagery reviews, primary biodiversity data collection, consultation with authorities and communities, and review of published studies.

Interviews: Interviews will be conducted with local people regarding wildlife and regularly used areas (e.g., drinking, feeding, migrating) and nature of (e.g., crop raiding, pest species, human–wildlife conflict or coexistence, hunting, movement corridors, and bushmeat). The ESIA social team will provide supplementary data.

Chimpanzees: Baseline surveys will assess habitat use by chimpanzees for resting, foraging and movements in areas likely to support this species, including the area between Bugoma and Wambabya Forest Reserves.

Daytime walked transects will record sightings of chimpanzees, footprints, dung, feeding signs and chimpanzee calls. The focus of the survey will be identifying, counting and establishing the age of night nests constructed in trees.

Interviews with potentially affected communities will collect information on chimpanzees where they may be present.

Other species, especially primates, will also be recorded.

Bucket pitfall traps: Small mammals, ground-dwelling amphibians and reptiles will be sampled using drift fencing lined with pitfall traps. Sampling will cover three days at each location.

Small mammal trapping: Lines of small mammal traps will be set at areas identified solely on their potential to support small mammals or alternating on either

side of pitfall trap lines set for reptiles and amphibians. The traps will be set late in the afternoon and checked the following morning. Live trapped animals will be identified and released near the place where they were captured. Sampling will cover three days at each location.

Refuge searching: Where safe to do so, searches will be undertaken for reptiles, amphibians and invertebrates during walked transects to detect the more cryptic species. Potential refuges (log, pile of brash leaves among exposed tree roots) will be searched and any species recorded.

Invertebrates: Surveys will comprise observations when walking transects and sweep netting to sample dense vegetation and to collect individuals to confirm species identification.

Invertebrates will be observed and collected by sweep nets and identified in the field or from voucher specimens.

Avifauna: Field surveys will use standardised methods (depending on habitat) which include audio-visual methods and sound recordings, as detailed in Conservation International's *Core Standardized Methods for Rapid Biological Field Assessment* (Larsen, 2016). Audio-visual methods will include point counts, line transects and timed species counts. Sound recordings will be analysed to identify unknown vocalisations.

Transect will be undertaken primarily in areas of most suitable habitat and will be designed to provide sufficient information for the AOI.

In species-rich tropical areas, gathering a complete list of species is not practical. An index of relative abundance based on timed species counts will be undertaken with observations at intervals over a fixed period.

Transects will be undertaken in the morning, from dawn to 11:00 am. Initial surveys may be undertaken during daylight hours to gather qualitative data on habitat suitability and to assess the need for further surveys at other times of the year. The start and end points for all transects will be marked with GPS and photographs taken. Surveyors will record birds seen or heard while walking along the transects with a species list recorded and notes on activity, e.g., breeding, feeding behaviour or flyover only. The number of birds heard or seen of each species will also be recorded. Should any endemic or threatened species be identified, GPS coordinates for the location will be recorded. To supplement data, sound recordings will be taken to enable analysis and identification of unknown vocalisations.

At wetlands with good shoreline and open water visibility, peak counts of all species will be recorded with notes on activity.

Aquatic and riparian habitats: The fieldwork includes a habitat assessment to identify potentially important and sensitive habitat such as spawning habitat or refuge areas and baseline surveys to determine species presence.

Habitat surveys will be undertaken at locations where the pipeline routes cross watercourses that are known to be flowing permanently and/or of significant seasonal importance to fish species of conservation interest (e.g., endemic, congregatory, migratory or critically endangered species). The fieldwork will include detailed mapping of habitat features for approximately 250 m upstream and 750 m

downstream of the crossing locations. Habitat that is likely to be of significant importance for fish will be highlighted.

Fish surveys will be completed at the same locations where habitat surveys are undertaken, using seine, cast and hand netting in shallower marginal areas of watercourses. Immediately following capture, all fish will be transferred to water-filled, aerated plastic buckets before being processed for identification to species level. Following identification, all fish will be returned alive as close as possible to the site of their capture. In the event that species cannot be identified in the field, digital photographs of anatomical features will be obtained to aid later identification.

Critical Habitat Assessment

In accordance with international good practice, a critical habitat assessment will be undertaken as part of the ESIA process.

Critical habitat as defined by IFC PS 6[22] may include an area that is not currently occupied by a species but is necessary for its recovery or future survival, e.g., in response to forecast climate change. The concept of critical habitat moves focus away from individual receptors (e.g., single protected plant species or an important bird, mammal or reptile) and looks for areas, referred to as discrete management units (DMUs), of significance in terms of the species they support, their importance for evolutionary processes or their uniqueness as a habitat.

Critical habitat assessments look to put a project and the habitats potentially affected into the context of their surroundings; DMUs are therefore typically larger than the footprint of an individual project.

Guidance Note 6 (IFC, 2012) provides detailed guidance on how to undertake a critical habitat assessment, which will be followed.

8.4.2 Geology, Soils and Contaminated Land

The scope of work for geology, soil and contaminated land will be to:

- describe baseline geological, geomorphological and soil types, use and importance using information from previous studies and data collection undertaken during field surveys
- understand what pre-existing contamination may be present within the projects' AOI
- assess project residual impacts on soils using the methods described in Section 7.2, Impact Assessment Process and in Section 7.3, Soils Impact Assessment.

[22] Critical habitats are areas with high biodiversity value, including (i) habitats of significant importance to critically endangered and/or endangered species; (ii) habitats of significant importance to endemic and/or restricted-range species; (iii) habitats supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.

8.4.2.1 Baseline Data Collection

Desk-Based Baseline Study

Geology

For the Tilenga feeder pipeline and EACOP project, desk-based research will be undertaken, which will include reviewing data collected during the planned ground and geotechnical investigations and published data on quarrying and mining operations in the AOI.

Soils and Contamination

Desk-based research will be undertaken to establish soil classifications, use, fertility and erosion for the Tilenga feeder pipeline and EACOP project. The research will use data and information from national databases and soil maps.

Desk-based research will also be undertaken to evaluate the location and nature of pre-existing contamination that may be present. Information from national databases, internet searches and site walkovers will be used to inform the baseline.

Field Baseline Survey

Geology

Detailed ground and geotechnical investigation will be conducted along the Tilenga feeder pipeline and EACOP project route to acquire data regarding ground conditions and geology.

Soils and Contamination

Inspection trial pits (0.5 m deep) will be excavated for the planned Tilenga feeder pipeline route and EACOP project route. The pit locations will be selected at locations where:

- physical changes in the surface characteristics of the soils are evident, perhaps because of contamination or salt crystallisation due to irrigation
- there are noticeable and sudden changes in land use
- there are areas of intense agriculture
- the AGIs and infrastructure are to be developed
- locations with the potential for pre-existing contamination.

The survey will describe the soil at each pit location and obtain soil samples, to be analysed at an accredited laboratory for the following suite of parameters:

- soil fertility: nitrogen, phosphate and potassium, bulk density, particle size density, salinity and cation exchange capacity
- soil quality (contamination): total petroleum hydrocarbons (TPH) speciated to aromatics and aliphatics, polycyclic aromatic hydrocarbons (PAH) and heavy metals
- additional parameters would be tested at selected locations based on fieldwork observations.

The report will also assess the level of existing contamination of the soil, for baseline due diligence. The contamination levels will be compared to Ugandan and international standards.

8.4.3 Surface Water

The scope of work for the surface water data collection for the Tilenga feeder pipeline and EACOP projects will be to:

- describe the baseline surface water environments of the AOI, to allow an understanding of the conditions at the water systems, including major and minor river systems, water bodies and wetlands
- assess project residual impacts on surface water using the methods described in Sections 7.2 and 7.3, Impact Assessment Process and Impact Assessment.

8.4.3.1 Baseline Data Collection

Desk-Based Baseline Study

For the Tilenga feeder pipeline and EACOP project, desk-based baseline data will be collected and assessed for the following:

- flow regime at road and pipeline crossings and AGIs
- the availability of surface water resources for use by communities in relation to road and pipeline crossings and AGIs
- water resources availability for project water-supply purposes
- river channel and flood plain morphology and bed and bank materials at road and pipeline crossings
- flood magnitude and frequency at road and pipeline crossings
- river and floodplain hydraulics under flood conditions at road and pipeline crossings
- river channel instability in drainage basins crossed by roads and pipelines at crossing points
- the sensitivity of watercourses to potential contamination
- river flow and water quality data at locations proposed for:
  - sourcing water required for construction and operation
  - sourcing water for hydrostatic testing and for test water discharge
  - effluent discharges
- information on planned or potential environmental changes upstream or downstream of watercourse crossings.

Field Baseline Survey

Field water-quality surveys will be conducted at key watercourse crossing locations. For the Tilenga feeder pipeline, the following perennial watercourses have been identified for sampling:

- Waiga River
- Waisoke River
- Sonso River
- Waki River.

For the EACOP project, the following perennial watercourses have been identified for sampling:

- Nkusi–Kafu River
- Katonga River
- Kibale River
- Jemakuriya River.

Two rounds of water sampling will be conducted at the crossing locations or at the nearest accessible location: one during high flow and the other during low flow to account for any seasonal variability. The flow in the watercourse during sampling will be estimated by visually estimating the width of flow (in metres), depth (in metres) and velocity of flow (in metres per second) or, alternatively, the float method if feasible. The water quality sampling and analyses will be conducted for a number of standard parameters and optional parameters that may vary from location to location depending upon potential receptors and presence of other parameters based on planned and unplanned discharges from construction and operation of the project.

The standard analyses include:

- pH
- conductivity
- chloride
- dissolved oxygen
- biochemical oxygen demand (BOD) turbidity
- suspended solids
- total petroleum hydrocarbons (TPH)
- site observations: smell, gas bubbles, algae, iridescence, bacterial aggregates and precipitates.

The optional parameters include:

- chemical oxygen demand (COD)
- total coliform and *E. coli*
- TPH speciated to aromatics and aliphatics
- polycyclic aromatic hydrocarbons (PAH)
- heavy metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, vanadium and zinc
- sulphate
- barium
- calcium
- iron.

The water sampling methodology accords with the BS ISO 5667-6: 2006 Guidance on sampling rivers and streams. The samples will be analysed by an accredited laboratory.

The data collected will provide a baseline from which potential changes during construction, operation and decommissioning can be monitored.

Sediment Sampling

Sediment sampling will be conducted during the dry season at the water sampling points.

At each location, a sediment sample will be taken from the left and right banks below water level and the two samples will be combined and homogenised. The samples will be analysed.

The sample analyses include:

- pH
- chloride
- TPH
- total phenols
- sulphides
- heavy metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, vanadium and zinc
- site observations: texture, colour, odour, presence of biota, presence of detritus and the depth of sediment sampled.

8.4.4 Groundwater

The scope of work for the groundwater data collection for the Tilenga feeder pipeline and EACOP project will be to:

- understand the hydrogeological regimes in the AOI by characterising depth to groundwater, quality, flow direction and local abstraction
- assess project residual impacts on groundwater using the methods described in Sections 7.2 and 7.3, Impact Assessment Process and Impact Assessment.

8.4.4.1 Baseline Data Collection

Desk-Based Baseline Study

Baseline data collection will be undertaken for the AOI to allow for characterisation of the following:

- depth to the water table. This will be done through interpreting national hydrogeology maps, reviewing local districts' groundwater maps and reports, and obtaining data from the national hydrocensus database.
- the aquifer systems (location, thickness, aquifer conditions, sources of recharge, flow direction) including the Kagera aquifer. This will be done by reviewing local districts' groundwater maps and published reports.
- aquifer vulnerability and sensitivity, existing contamination, number and type of users and abstraction points and withdrawal capacity. This will be evaluated by collecting data on the depth to the water table, the permeability of the soil or rock above the water table and the quality of groundwater in the aquifer(s).
- groundwater–surface water interaction (specific to sensitive surface waterbodies that rely on groundwater such as shallow unconsolidated aquifers typically of Quarternary or Tertiary age). This will be achieved by studying

hydrogeology maps, collection of data on surface waterbodies (depth, flow) and interpretation of data to identify losing or gaining[23] streams.

- groundwater quality either based on a national classification system or published groundwater quality data
- demand on groundwater resources and their ability to recharge. This will be done by reviewing local districts' hydrogeology maps, published reports and data from local agencies or departments (e.g., Environmental Sensitivity Atlas; NEMA 2010)
- the location of public water supply boreholes, private wells and springs within 2 km of proposed groundwater abstraction points for supply to the AGIs, construction and makeup water for hydrotesting.

Field Baseline Survey

Potential locations for permanent groundwater monitoring wells will be defined in collaboration with the FEED team. The locations may be at construction camps, pipe storage areas and other temporary areas. In addition, groundwater monitoring wells are likely to be required at specific locations along the pipeline route. Geotechnical boreholes (wells) will be monitored for the AOI, plus samples taken from local wells if accessible.

Sampling methodology follows BS ISO 5667-11: 2009 Water Quality – Guidance on sampling groundwaters, handling and analysis will follow good practice.

The wells will be tested for the list of parameters below and sent to an accredited laboratory:

- pH and conductivity
- dissolved oxygen
- turbidity
- suspended solids
- total coliform
- *E. coli*
- TPH
- heavy metals
- PAH
- volatile organic compounds (VOCs)
- COD and five-day biochemical oxygen demand (BOD5)
- sulphates, barium, calcium, chloride.

Chemical parameters and temperature will be recorded at each wellhead using calibrated multiparameter probes (electrical conductivity (EC), pH, dissolved oxygen).

[23]A losing stream is a stream or river that loses water as it flows downstream. The water infiltrates into the ground recharging the local groundwater, because the water table is below the bottom of the stream channel. This is the opposite of a more common gaining stream, which increases in water volume farther downstream as it gains water from the local aquifer.

Water Supply Abstractions and Effluent Discharges

Where groundwater supplies are to be developed for AGIs, temporary facilities, construction and hydrotest makeup water hydrocensus surveys will be conducted at representative wells and boreholes within a 2-km radius of the proposed abstraction boreholes or wellfield. The field data collected will include the elevation of wells and boreholes using differential GPS and the depth to groundwater level in open wells or boreholes using a diameter, drilling logs, pumping test data and water quality data from government archives.

8.4.5 Landscape

Following the establishment of the final Tilenga feeder pipeline and EACOP project route corridors and associated AGIs, the need to evaluate the landscape VEC will be confirmed. If required, the scope of work for landscape data collection would be to:

- characterise the existing baseline landscape within the AOI.
- assess project residual impacts on landscape receptors using the methods described in Sections 7.2 and 7.3, Impact Assessment Process and Impact Assessment.

8.4.5.1 Baseline Data Collection

Desk-Based Baseline Study

Desk-based research will be undertaken for the Tilenga feeder pipeline and EACOP project to understand the landscape and visual baseline.

Field Baseline Survey

Vantage point surveys will be undertaken to verify desktop study findings and to photograph and record the existing landscape and visual baseline characteristics and conditions for the location and surroundings of the proposed projects.

Photographs will be taken at four viewpoints at the proposed AGI locations to illustrate the baseline character and visual context during daytime conditions to allow preparation of photomontage visualisations for the Kabaale Hub and the site of pumping station 2.

8.4.6 Air Quality and Climate Change

The scope of work for the air quality and climate change data collection, for the Tilenga feeder pipeline and EACOP project, will be to:

- characterise the baseline air quality at the AGIs
- quantify air quality during day, evening and night-time periods in line with periods of construction and pumping stations operations
- quantify air quality during day, evening and night-time periods
- quantify the project greenhouse gases (GHG)
- assess project residual impacts on air quality and climate change using the methods described in Sections 7.2 and 7.3, Impact Assessment Process and Impact Assessment.

8.4.6.1 Baseline Data Collection

Desk-Based Baseline Study – Air Quality

Desk-based data collection will be undertaken for the Tilenga feeder pipeline and EACOP project to understand baseline air quality within the AOI. Information gathered from internet searches and site walkover reports will be used to provide data.

Field Baseline Survey – Air Quality

As there are no operational point sources for the Tilenga feeder pipeline, there is no requirement to collect data. Baseline data collection is proposed for the EACOP project at PS1 at the Kabaale Hub and PS2.

At both locations, ambient concentrations of NO_x, NO_2, O_3, hydrogen sulphide (H_2S), SO_2 and VOCs (including benzene, toluene, ethylbenzene, xylenes and the 10 most abundant VOC compounds) will be sampled using passive diffusion tubes. The tubes will be deployed in duplicate and exchanged every six weeks, covering a survey duration of 24 weeks. Diffusion tubes will be supplied and analysed by an accredited laboratory.

Airborne particulate matter (PM_{10} and $PM_{2.5}$) and carbon monoxide (CO) will be measured using handheld direct reading instruments during each visit to the monitoring sites to install, collect or decommission the diffusion tubes. This will provide additional information about baseline air quality in the area. The following information will be recorded during measurements of particulate matter: sample coordinates, sampling elevation, vehicle activity, human activity and any other observations that may affect the measurements.

Climate Change

During FEED, when combustion source technical specifications become available, the total projects' GHG emissions will be calculated.

8.4.7 Acoustic Environment

The scope of work for acoustic environment data collection for the Tilenga feeder pipeline and EACOP projects will be to:

- characterise the baseline acoustic environment in the AOI
- quantify the acoustic environment during day, evening and night-time periods
- assess project residual impacts on noise receptors using the methods described in Sections 7.2 and 7.3, Impact Assessment Process and Impact Assessment.

8.4.7.1 Baseline Data Collection

Desk-Based Baseline Study

Desk-based data collection will be undertaken for the Tilenga feeder pipeline and EACOP project to understand baseline acoustic levels and sensitivities within the AOI. Information gathered from internet searches and site walkover reports will be used to inform this baseline.

Field Baseline Survey

For the Tilenga feeder pipeline and EACOP project, baseline monitoring will be undertaken at up to two of the closest receptors to each AGI and temporary facility. Noise monitoring will comprise day, evening and night-time measurements, as the projects' AGIs and temporary facilities will have the potential to operate or function 24 hours a day. Measurements will comprise a combination of attended and unattended monitoring, collecting $L_{Aeq,T,}$ $L_{A90,T}$, L_{Amax} and L_{A10} indices.

Construction impacts associated with the pipeline route will normally be restricted to daytime periods and therefore daytime monitoring will be undertaken at receptors near the route. This monitoring will cover a number of one-hour samples during typical construction hours. For the Tilenga feeder pipeline, monitoring will cover a minimum of 7 locations, with 25 locations for the EACOP project.

Areas with sensitive fauna will also be considered for a 24-hour monitoring period. This will be used to determine whether construction impacts have the potential to affect fauna. Advice will be obtained from the biodiversity teams to establish monitoring locations.

All baseline measurements will be performed according to British Standard BS 7445-1:2003: Description and Measurement of Environmental Noise Guide to Quantities and Procedures. All equipment used will be of Type 1 classification, according to British Standard BS EN 61672-1:2003: Electroacoustics, Sound Level Meter Specifications. Equipment will have been calibrated in the laboratory and field calibration will be undertaken before and after each set of measurements.

8.4.8 Archaeology and Cultural Heritage

8.4.8.1 Scope of Work

The scope of work for archaeology and cultural heritage will be to:

- conduct baseline data collection to create a detailed record and assign asset importance
- assess project residual impacts using the methods described in Section 7.2 Impact Assessment Process and in Section 7.3.3 Archaeology and Cultural Heritage Impact Assessment.

8.4.8.2 Baseline Data Collection

An initial discussion with the Uganda Department of Museums and Monuments established that for approximately 90% of the country, no systematic archaeological investigations have been undertaken. The baseline data collection, therefore, will be the main source of information for archaeological remains within the archaeology and cultural heritage AOI.

Due to the lack of data from archaeological investigations, the following limitations apply:

- Over large areas, potential site locations have not yet been identified.
- Actual archaeological and cultural heritage assets locations are often not available, and some documented assets may have been lost due to development or agricultural activity over the past 50 years.

Desk-Based Baseline Study

The baseline data collection will include the review and refinement of the scoping data.

The first stage of assessment will confirm the location and extent of known archaeology and cultural heritage assets within the proposed AOI. Aerial photography of the proposed AOI will be reviewed for known archaeological and cultural heritage assets. A subsequent review of the photographs, using the experience gained, will assist in identifying similar, but previously unidentified assets. This review of, and search for, previously unknown assets may be augmented by an assessment of LIDAR data where available.

Field Baseline Survey

Cultural heritage features can be identified by several techniques such as walkover surveys, and structured interviews with community leaders. Unidentified archaeological assets, however, are most likely to be identified during construction ground works. This could result in a high frequency of chance find discoveries during the construction phase, and a chance finds procedure will be implemented to ensure that exposed archaeological remains are managed correctly.

Geotechnical investigations are being commissioned along the route and archaeologists will be engaged to monitor the work to prevent accidental damage to previously unidentified sites. This exercise presents an opportunity to enhance the scoping baseline data with in situ observations that will inform the baseline data collection strategy.

The field surveys will sample areas with high potential for archaeological and cultural heritage sites, which will be guided by features often associated with archaeological and cultural heritage sites, such as water resources, geomorphology and topography.

The survey will:

- rank the significance of the sites
- update record and mapping of assets.

Locations considered to have a high potential for archaeology and cultural heritage assets in the AOI will be selected for walkover surveys that will include:

- general area histories
- origin of local settlements
- ancestral ties to lands
- traditions and cultural dynamics
- kinship systems (matrilineal, patrilineal and so forth)
- local belief systems
- customs, including ceremonies, food and drinks, taboos and burials
- religious sites
- characteristics of known intangible cultural heritage (ICH) sites in the project area including holy trees or rocks, meeting places, sacred groves, rivers and important routeways.

Structured interviews with local stakeholders identified by the Department of Museums and Monuments as important sources for tangible and ICH are essential to the identification of cultural heritage sites. Many such sites are considered secret or only locally known, so these interviews provide the only effective tool for identifying ICH.

8.4.9 Socio-economic and Health

8.4.9.1 Scope of Work

The scope of work for socio-economic and health impact assessment will be to:

- characterise the socio-economic and health conditions of the potentially project-affected communities (PACs) in the AOI
- assess project residual impacts on socio-economic and health receptors using the methods described in Section 7.2 Impact Assessment Process and in Section 7.3.4 Socio-economic and Health Impact Assessment.

8.4.9.2 Baseline Data Collection

During the scoping study, data on socio-economic and health conditions for the Tilenga feeder pipeline and EACOP project were collected from secondary sources, site visits and scoping stakeholder meetings held during May 2017. A summary of the scoping data is presented in Section 6.3. A data gap analysis was used to develop the ToR and the social and health baseline will be informed by both primary and secondary data as described below.

Desk-Based Baseline Study

Secondary data that will inform the social and health baseline covers studies undertaken for upstream activities and additional secondary data including:

- district development plans
- Albertine region sustainable development project, Resettlement Policy Framework (Government of Uganda 2013)
- Agriculture development programme. Lake Albert basin. Towards Uganda's 2040 Vision. Programme proposal (Traidlinks ND).

Field Baseline Survey

Sampling

Primary data will be collected at PAC level, as well as through interviews of other stakeholders (i.e., tourism, health and education agencies, community organisations and NGOs).

The social baseline will sample representative communities in the AOI. Data will be collected from approximately 20 villages adjacent to Tilenga Feeder pipeline and 40 villages adjacent to EACOP project (i.e., a 20% sample of villages in the AOI, which is considered sufficient to obtain a representative sample).

The sample will be identified according to the following criteria:

- all subcounties in the AOI

- a variety of livelihood strategies will be covered (farming, pastoralism, fishing)
- villages with ethnic or other existing conflicts that may affect the project
- villages near biodiversity areas to ensure ecosystem services information is gathered
- both urban and rural isolated villages
- emphasis to be placed on communities close to project components.

Data Collection Techniques

The following data collection techniques will be used:

- focus groups and participatory mapping, which consists of semi-structured interviews with a group of people (between 8 and 15 generally) who have knowledge about a particular topic. The aim is to obtain qualitative data that represents average group perceptions, attitudes and knowledge. In each PAC sampled, there will be a focus group with the village chief and council to develop a PAC profile including village infrastructure and land use and women's focus groups, youth focus groups and other to be identified groups.
- focus group participants to be asked to make a drawing of all infrastructure and land use in the village. This drawing will facilitate the discussion of village issues, such as social cohesion, problems, history and livelihoods. There will be a women's focus group in each sampled PAC that will be used to discuss gender issues, health, education and other community issues. Depending on the PACs, focus groups may be youth, farmers, fishermen, pastoralists, natural resource users and specific vulnerable groups.
- key informant interviews, which will include companies, government representatives, teachers, NGOs and civil society organisations with knowledge in terms of, for example, health, education, economic activity, livelihoods and tourism
- observation and village inventory using a template. Researchers will take notes on various aspects of village activities, interactions between villagers and infrastructure.
- household surveys, which will sample around construction camps and aboveground facilities to assess potential impact of influx on livelihoods
- transect walks, which will be undertaken with local informants in each PAC across agricultural fields, forested areas, hunting areas and fishing areas to record and discuss natural resource use.

Table 8.4-2 lists the topics for which data will be collected.

Table 8.4-2 Topics for Data Collection

Section	Topics
Demographics	Population (age, gender) Ethnic groups Migration Nomadic and seasonal migration Religion

Table 8.4-2 Topics for Data Collection

Section	Topics
Economics	Economic growth Employment and unemployment Household income and expenditure Major industries and sectors Small businesses Tourism
Education	Education infrastructure Education service coverage Educational status
Gender	Gender differences and roles Legal provisions Participation in political and corporate and civil affairs
Health	Mortality and morbidity (burden of disease) Health infrastructure Health service coverage Waste and sanitation (rural and urban) Access to clean water Accidents and injuries Substance abuse and alcoholism Health-seeking behaviour, cultural and traditional health practices Diseases (vector related; soil, water and waste related; communicable; sexually transmitted; noncommunicable; veterinary; and zoonotic) Exposure to hazardous materials Food and nutrition related issues Health programmes Mental health and wellbeing
Human rights	Existing and past human rights issues International obligations and national legislation on human rights Conflicts within and between communities Indigenous people
Infrastructure	Communications Transport Power, electricity and energy Financial institutions and banks
Labour	Labour laws and practices Exploitive practices
Land	Land tenure Land use Land disputes and speculation

Table 8.4-2 Topics for Data Collection

Section	Topics
Livelihood strategies	Trade and commerce (small businesses) Artisanal fishing Artisans Farming and market gardening Animal husbandry Hunting and gathering
Political, institutional and administrative system	Local governments Civil society Governance Traditional governments and leadership
Security	Security forces Conflicts Crime
Social dynamics	Disadvantaged, minority and vulnerable groups Household structure Community structure Social cohesion Social norms and rules and taboos
Standard of living	Food and nutrition issues and food security Housing Access to services
Cultural heritage, history and culture	Intangible cultural heritage (in collaboration with cultural heritage team)

Figure 8.4-1 presents the data collection and processing strategy.

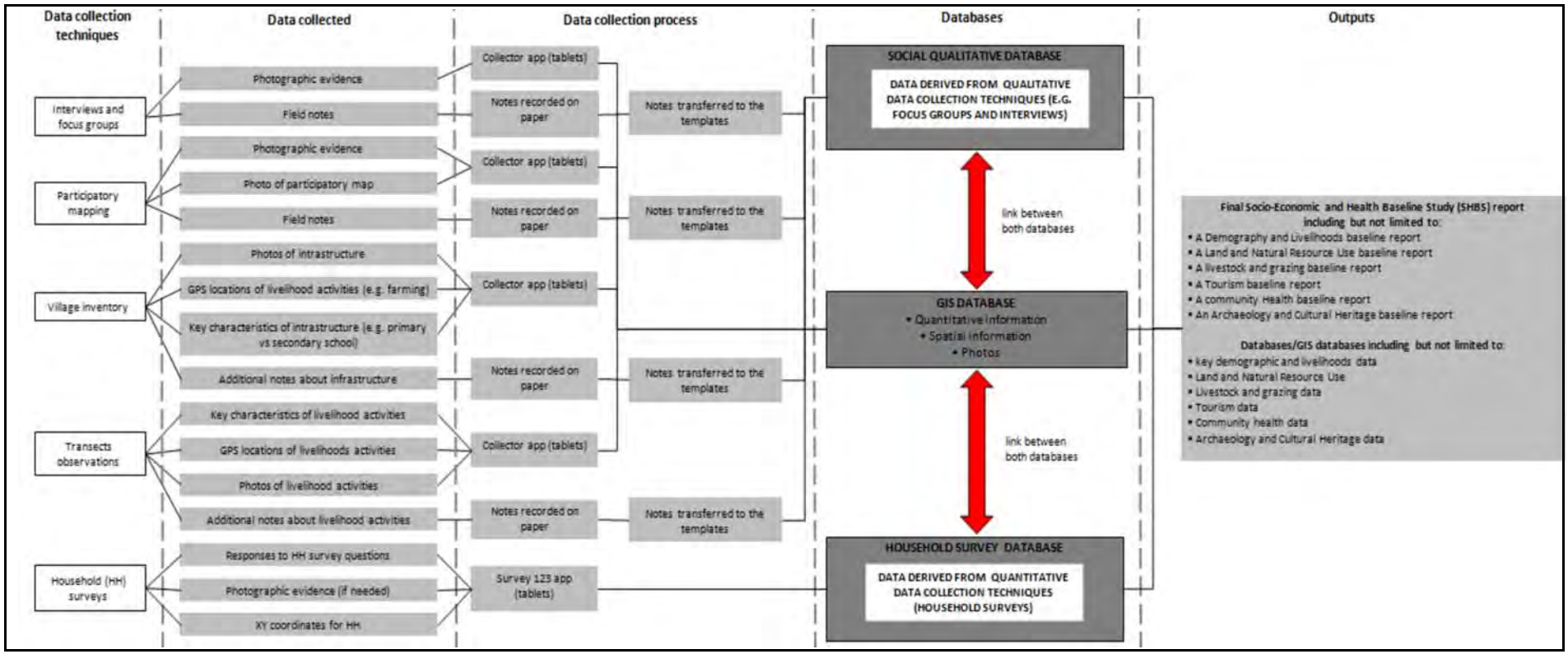

Figure 8.4-1 Data Collection and Processing Strategy for the Baseline Study

8.4.10 Traffic

The scope of work for traffic will be to:

- describe baseline traffic conditions on roads that will be used by project vehicles
- assess project residual impacts on traffic patterns using the methods described in Section 7.2 Impact Assessment Process and in Section 7.3.4 Socio-economic and Health Impact Assessment.

8.4.10.1 Baseline Data Collection

Site visits have been conducted during scoping to collect information on the type of road construction, the quality of the road surface, proximity of communities to the road and potential difficulties if used by construction traffic (see Section 6.3.3.9).

Desk-Based Baseline Study

Studies including the logistics philosophy developed during FEED will inform the baseline. Traffic data is available for trunk roads in the region, and will be obtained from the Uganda National Road Authority. Data for other roads and specific locations will be collected through traffic surveys as described below.

Field Baseline Survey

Traffic baseline data gathering will be based on the guidance provided in the UK Institution of Highways and Transportation guidelines for traffic impact assessments (1993).

Based on the initial observations made during scoping, 12-hour surveys of vehicular and pedestrian movements will be conducted at the following locations:

- Tilenga feeder pipeline: along the main road or at a junction at Biiso and Hoima
- EACOP project: along the main road at the (four) junctions in Masaka, Mubende, Kitenga and Kyotera.

Traffic measurements will be taken between 08:00 and 18:00 to establish existing traffic conditions. Records taken for traffic totals at 15-minute intervals will be obtained and GPS coordinates of the survey location recorded. The collected data will include vehicle numbers and type (e.g., car, motorcycle, bus).

To obtain information on the effects of project traffic on existing traffic conditions, e.g., where construction traffic must drive through a town or village, the following information will be collected:

- Tilenga feeder pipeline: two one-day surveys at two locations covering traffic routes to the construction camp and pipe yard (MCPY)
- EACOP project: eight one-day surveys at four locations (two surveys per location) covering the main traffic routes to the construction camps, pipe storage yards and coating facility.

The survey will include a comparison of weekend and weekday traffic.

8.4.11 Ecosystem Services

8.4.11.1 Scope of Work

The scope of work for ecosystem services will be to:

- collect data using ecosystem services questionnaires (see Section 7.4)
- assess project residual impacts on ecosystem services using the methods described in Sections 7.2, Impact Assessment Process and in Section 7.4.1, Ecosystem Services Assessment.

8.4.11.2 Baseline Data Collection

The ecosystem services assessment will include all the AOIs for the VECs of the Tilenga feeder pipeline and EACOP project.

Desk-based Baseline Study

A review of scoping data and existing literature will be used for the development of questionnaires used in the field.

Field Baseline Survey

Each of the teams undertaking field-based data-collection will be provided with an induction for the data to be collected using the questionnaires.

8.5 Impacts Assessment Process

The impact assessment of the Tilenga feeder pipeline and EACOP project on the physical, biological, socio-economic and health environment will be undertaken according to national legislation and guidelines as well as international standards and guidelines.

Each of the potentially significant impacts identified during scoping will be systematically characterised and assessed in an iterative process with the engineering team as the project design develops. Consideration of potential impacts will take account of additional baseline information collated from desktop reviews, field surveys and stakeholder engagement.

The VECs identified during the scoping process will form the basis of the assessment of both project and cumulative impacts, the latter evaluating the incremental impact from existing, other planned or reasonably defined developments. VEC sensitivity will be considered with a ranking system being applied to VECs that exhibit gradations of sensitivity. Compliance with standards and thresholds will be used to establish impact magnitude or to inform significance directly where such values are defined for VECs.

The ESIA will address impacts from normal operations plus accidental and abnormal events. Types of impact will be characterised as:

- direct (primary) from a direct interaction between a planned project activity and the receiving environment
- indirect (secondary) following on from the primary interactions between the project and its environment due to subsequent interactions in the environment

- induced resulting from other activities that are encouraged to happen as a consequence of the project
- transboundary across a national boundary
- cumulative. The cumulative impact assessment (CIA) will be an integral component of the ESIA.

Before the significance of potential impacts is determined, measures for enhancement of benefits and mitigation of negative impacts will be developed to ensure that residual impacts are deemed as low as reasonably practicable.

Potential impact significance of the proposed developments on the VECs will be assessed by considering the following range of attributes: magnitude (the degree of change from baseline conditions); direction of change (beneficial, negative); frequency of the impact; duration of the impact; and reversibility (whether the change is reversible or permanent).

All mitigation measures will be collated into a commitments register including those measures applied to nonsignificant impacts that were scoped out of the ESIA. Every commitment will be carried through to an environmental or social management plan to facilitate implementation (see Section 8.8). Compliance with the commitments will be a key component of monitoring and audit protocols.

8.6 Schedule

The Tilenga feeder pipeline and EACOP project accelerated schedule requires the following optimised ESIA schedule:

- collection of baseline data through Q3 2017 and Q4 2017
- assessment of project cumulative and transboundary effects, to commence and end in Q3 2017
- preparation of ESIA document to commence in Q4 2017.

8.7 Proposed ESIA Table of Contents

Table 8.7-1 shows the proposed ESIA table of contents for both the Tilenga feeder pipeline and EACOP project ESIAs.

Table 8.7-1 Proposed ESIA Table of Contents

Section Number	Section Name	Indicative Content
i	Executive Summary	Concise summary of the key findings of the ESIA report written in clear, nontechnical language; will be translated into local languages and distributed among relevant stakeholders
ii	TOC	Table of contents
iii	Glossary	List of key terms used in the ESIA report, with definitions

Table 8.7-1 Proposed ESIA Table of Contents

Section Number	Section Name	Indicative Content
iv	Acronyms	List of acronyms used in the ESIA report, with definitions
1	Introduction	Introduction to the ESIA report, including the project justification and purpose and an overview of the ESIA report
2	Project Background and Description	Description of: • project location • project components and associated facilities • equipment and materials to be used and wastes generated • pre-construction, construction, commissioning, operation and decommissioning activities
3	Alternatives	Review of the alternatives considered during the design of the project
4	Legislative, Policy and Administrative Framework	Overview of the applicable legal, policy and administrative framework according to which the ESIA is being carried out
5	ESIA Process and Methodology	Description of the ESIA process and methodology for identifying and assessing the significance of potential impacts
6	Environmental and Social Baseline Conditions	Description of the baseline conditions in the project AOI, including existing (pre-project) pressures and trends in the condition of VECs. This section will be based on the data collected throughout the scoping and the ESIA stages
8	Stakeholder Engagement	Description of the stakeholder engagement process
9	Potential Impact Identification and Evaluation – Normal Operations	Identification and assessment of predicted potential impacts during normal construction, commissioning, operation and decommissioning activities
10	Potential Impact Identification and Evaluation – Abnormal Operations and Accidental Events	Identification and assessment of predicted potential impacts that may occur in the event of abnormal operation or accidental events (e.g., fire or breakage of the pipeline)

Table 8.7-1 Proposed ESIA Table of Contents

Section Number	Section Name	Indicative Content
11	Environmental and Social Management and Monitoring Plan	An overarching plan, encompassing all mitigation measures developed to prevent or reduce potential impacts and monitoring proposals
12	Summary and Recommendations	Brief overview of the key findings, conclusions and recommendations of the ESIA
A1	Baseline Reports	A compilation of the baseline field survey reports
A2	Effects Assessments	Supporting text providing additional information for the impact assessments included in Section 9
A3	Environmental Risk Assessment and Oil Spill Dispersion Modelling	Supporting text providing additional information for the impact assessments included in Section 10
A4	List of Stakeholders	A list of the projects' stakeholders identified during the ESIA process
A5	Records of Stakeholder Engagement	Description of stakeholder engagement activities (meetings, presentations) carried out, complete with information on date, venue, participants and topics discussed
A6	Acknowledgements	List of the contributors to the ESIA report, including ministries and institutions consulted

8.8 Management Plans

Implementation of mitigation measures developed through the ESIA process will be facilitated by a comprehensive suite of environmental and social management plans[24] (ESMPs). The exact list of the ESMPs will be developed at the ESIA stage, tailored to address the identified potential impacts, and is likely to include the following plans:

- Stakeholder Engagement Plan
- Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP)
- Project Induced In-Migration Management Plan (PIIM)
- Human Rights Management Plan
- Security Plan
- Community Liaison Plan

[24] Ecosystem services will be addressed in the relevant plans

- Local Recruitment and Training Plan
- Worker Welfare and Camp Management Plan
- Environmental and Social Monitoring and Evaluation Plan
- Biodiversity Action or Management Plan
- Erosion Control and Reinstatement Plan
- Waste Management Plan
- Pollution Prevention Plan
- Oil Spill Contingency Plan
- Resource Management Plan
- Community Health, Safety and Security Plan
- Traffic Management Plan
- Supplier Management Plan
- Cultural Heritage Management Plan (including a chance finds procedure).

These management plans will inform contractor management and be supplemented by monitoring plans complete with reporting procedures, key performance indicators, as well as inspections and audit programmes to ensure effective implementation.

8.9 ESIA Team

The ESIA project team comprises the EACOP Pipeline Project Team (PPT), representatives from the FEED team, and a team of international and Ugandan environmental and socio-economic consultants, RSK Environment Ltd (RSK) and Eco & Partner Consult. These companies comprise experts, some of whom have been, or are in the process of being, duly certified and approved according to the provisions of Section 11 of the Environmental Impact Regulation, 1998.

RSK has a proven track record of providing ESIAs and other environmental services for oil and gas infrastructure projects, particularly large-scale pipelines, crossing international borders and to IFC and other international lender standards. Some of the previous projects include:

- Trans-Adriatic Pipeline (TAP), Greece, Albania, Italy
- South Caucasus Pipeline Expansion (SCPX) Project, Azerbaijan and Georgia
- Western Route Export Pipeline (WREP) Sectional Replacement Project, Georgia.

RSK has a dedicated project leadership team with oil and gas pipeline expertise. A full range of in-house environmental and social subject matter experts with experience of oil and gas pipeline projects supports the leadership team. RSK also has experience in working with project engineers to ensure environmental, health and social inputs have been integrated to project designs.

RSK has experience for a vast range of disciplines and a track record of working with in-country technical experts. It has established partnerships and relationships with local environmental consultants in East Africa, particularly in Uganda and Tanzania.

Eco & Partner Consult, the local partner of RSK, is a registered environmental-management consulting firm specialising in ESIAs. It has a highly qualified and experienced team of professionals from diverse backgrounds. Over the past nine years, the team has undertaken ESIAs for many clients in the oil and gas, petroleum supply and telecommunication sectors in Uganda. Previous projects include:

- EA-1, EA-2 North Development Project – Buliisa and Nwoya District (EA-1 is now known as Contract Area 1, CA-1; EA-2 is now Licence Area 2, LA-2)
- ESIA for Kingfisher Discovery Area (EA-3A) – Hoima District
- ESIA for Kingfisher Infield Access road, Development, Kingfisher Discovery Area (EA-3A) – Hoima District.

Appendix F lists the proposed team members, describes their respective roles and presents their curricula vitae (CVs).

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APPENDIX A VALUED ENVIRONMENTAL AND SOCIAL COMPONENTS

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Biodiversity				
Legally protected, internationally or nationally recognised areas	There are internationally and nationally recognised and legally protected areas close to the proposed project including a national park; wildlife, forest and game reserves; Ramsar wetlands, key biodiversity areas; wildlife management areas; high biodiversity wilderness areas; and private ranches.	The project could affect these areas either because the pipeline crosses or is within an ecologically relevant distance from the sites. In addition, cumulative effects on the biodiversity features of these areas could occur from other developments. Project and cumulative effects could occur from habitat loss, habitat fragmentation, disturbance or displacement of species, introduction of invasive species, facilitated access for hunters and collection of other resources, and other increased interactions with humans resulting from in-migration and economic development associated with the project. In addition, some of these sites may be considered critical habitat or natural habitat, as defined by IFC PS6. Further work is needed to determine if all sites should be included as VECs on biodiversity grounds, for example some forest reserves are designated for timber production and may be of limited biodiversity value.	Cultural; Provisioning; Regulating; Supporting	Construction stage: The area of interest (AOI) will encompass the boundary of the protected or recognised area directly or indirectly affected by the project and its activities arising from, for example, facilitated access, edge effects, spread of invasive species, and temporary and permanent habitat loss and fragmentation. Operation stage: The AOI will be the boundary of the protected or recognised area directly or indirectly affected by the project and its activities arising from permanent habitat loss or fragmentation, facilitated access, edge effects and spread of invasive species. Cumulative impacts: The AOI will comprise the boundary of the protected or recognised area.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Flora and fauna species of conservation importance (terrestrial and aquatic)	Flora and fauna species of conservation value include those that are critically endangered, endangered, protected, endemic or range restricted, keystone or landscape species (far-ranging and making long-distance movements). This VEC includes local and long-range wildlife movement corridors.	Project and cumulative effects on the VEC could occur because of habitat loss, habitat fragmentation, disturbance or displacement of species, introduction of invasive species, facilitated access for hunters and collection of other resources, and other increased interactions with humans resulting from in-migration and economic development. In addition, some of these species are likely to be considered critical habitat as defined by IFC PS6.	Cultural; Provisioning; Supporting	Construction stage: The AOI will encompass the direct project footprint in addition to potential indirect impacts arising from, for example, facilitated access, edge effects, spread of invasive species, and permanent habitat loss and fragmentation. According to IFC PS6, the AOI may need to be extended to incorporate the entirety of any discrete management units (DMUs – an area with a definable boundary within which the biological communities or management issues have more in common with each other than they do with those in adjacent areas) identified for endangered or critically endangered species, endemic or range-restricted species, migratory or congregatory species, or keystone species. Operation stage: The AOI would include all habitat identified as a DMU for species of conservation concern directly or indirectly affected or at risk from the project and its activities, including as a result of facilitated access. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Habitats of conservation importance (terrestrial and aquatic)	Habitats of conservation value include areas classified as biodiversity hotspots, also riparian habitats and wetlands.	Project and cumulative effects on the VEC could occur because of habitat loss, habitat fragmentation, disturbance or displacement of species, introduction of invasive species, facilitated access for hunters and collection of other resources, and other increased interactions with humans due to in-migration and economic development. These habitats may also be considered as critical or natural habitat as defined by IFC PS6.	Cultural; Provisioning; Regulating; Supporting	Construction stage: The AOI would encompass the direct project footprint in addition to potential indirect impacts on these sites arising from, for example, facilitated access, edge effects, spread of invasive species, and permanent habitat loss and fragmentation. The AOI may need to include wetland and riparian habitats downstream of the project that are potentially at risk (e.g., from spills or sedimentation). Operation stage: The AOI would include all habitats of conservation importance directly or indirectly affected or at risk from the project and its activities including, in the case of wetlands and riparian habitats, indirect or secondary impacts resulting from abnormal and accidental events. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Physical Environment				
Surface water: watercourses, wetlands and waterbodies (ephemeral and permanent)	Watercourses and waterbodies used for abstraction and providing other important ecosystem services. Surface water is an important source of irrigation and potable water. Ephemeral is considered to cover those watercourses with seasonal flow and those with flow just following rainfall.	Potential for project and cumulative effects on surface water hydrology and geomorphology of rivers, surface water supplies and ecosystem services. These include effects of abstraction for supply of water to project facilities and processes, erosion and sedimentation by flowing water in river channels, and planned and unplanned discharges. Planned discharges include treated domestic sewage and treated industrial effluent. Unplanned discharges include spills and leaks of chemicals, fuels and waste from the project that reach waterbodies have the potential to contaminate the receiving water and sediment in the bed and banks downstream and cause secondary impacts.	Cultural; Provisioning; Regulating; Supporting	Construction stage: The AOI of surface water will encompass the project footprint arising from the pipeline working width and access roads at or near watercourse crossings, and all surface water near aboveground installations (AGIs) and camps. The AOI will need to include waterbodies potentially at risk downstream of the project from any spillage to watercourse or waterbody bearing in mind the potential for dilution and natural degradation. The AOI will need to consider the location of sources of contaminants in relation to potential watercourses, wetlands and waterbodies, including the travel time of potential contaminants in watercourses under worst-case conditions in relation to potential clean-up times. Operation stage: The AOI will include all watercourses and waterbodies affected by or at risk from the project and its activities, including abnormal and accidental events and travel time in worst-case conditions in relation to potential clean-up times. Cumulative impacts: The AOI will encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Groundwater	Aquifers and vulnerable groundwater used for abstraction or providing important ecosystem services, such as water purification. Groundwater is an important source of irrigation and potable water. Groundwater bodies can also have a connection with, and hence influence on, surface water.	There is potential for project and cumulative effects on groundwater. These include unplanned events: spills and leaks of chemicals, fuels and waste from the project that reach waterbodies have the potential to contaminate the receiving water and cause secondary impacts. In addition, the potential impacts of groundwater abstraction during construction and operation phases may affect local groundwater users.	Provisioning; Supporting	Construction stage: The AOI will encompass the project footprint as described in the footnote. The AOI will include areas with known abstractions and with potential sources of spills and leaks of fuel and chemicals. The AOI will encompass all groundwater aquifers. The impacts may be caused by abstraction of groundwater (quantity) or the potential migration of contaminants (quality) to receptors such as surface waterbodies and groundwater users (wells, boreholes and springs). The AOI will account for the temporary impact source from construction activities and the assumption that any leaks and spills will be controlled immediately. Operation stage: The AOI will include the extent of all known or suspected groundwater aquifers affected or at risk from the project and its activities including impacts to groundwater levels caused by abstraction, and impacts resulting from effluents, spillages or similar events. The AOI will encompass all groundwater aquifers. The impacts may be caused by the abstraction of groundwater (quantity) or the potential migration of contaminants (quality) to receptors such as surface waterbodies and groundwater users (wells, boreholes and springs). The AOI will account for the unplanned or accidental operational impact and the assumption that any leaks and spills will

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
				be controlled immediately. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other development.
Soils	The layers (soil horizons) above the bedrock are composed of weathered mineral materials, organic material, air and water. Soils support plant growth, agriculture and biodiversity by providing important ecosystem services, such as soil formation, nutrient cycling and primary production.	There is potential for direct and indirect project and cumulative impacts on soils and for unplanned events to have effects on soils.	Provisioning; Regulating	Construction stage: The AOI will encompass the project footprint arising from the pipeline working width, and all AGIs, construction camps, access roads and construction associated facilities. Potential impacts include soil compaction, altered soil properties (structure, fertility, and aeration status), erosion and soil loss, ground settlement, mobilisation of any pre-existing contaminants and soil contamination. Operation stage: The AOI will include the pipeline right-of-way, AGIs and operation camps together with nearby areas at risk from spillages and leaks, compaction and erosion. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Landscape	This VEC includes landscapes, valued as a resource in their own right, and people who experience changes in views.	Potential for project and cumulative effects on the character and quality of the landscape and for people within the AOI. In the absence of any existing landscape assessment or designations, factors that confer value on landscapes (including areas of recognised biodiversity, cultural or heritage value; areas of noted recreational value and landscapes valued for their perceptual qualities, such as wildness, tranquillity and natural beauty; and landscapes, such as national parks and forest reserves) are therefore potentially sensitive to the type of industrial development proposed. The sensitivity of visual receptors (people) is dependent upon the susceptibility to change in views of the individual or group of people and the value attached to the particular view. People visiting areas where attention is focused on their surroundings may be sensitive to the type of industrial development proposed.	Cultural	Construction stage: The AOI will encompass areas from which the permanent and temporary project footprint is visible. Operation stage: The AOI will encompass areas from which the permanent project footprint is visible. Cumulative impacts: The AOI will encompass the likely range of combined impacts resulting from the project in addition to other development.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Air quality and climate	Airsheds for emissions from the pump stations. Airsheds of temporary facilities (camps, coating plants, roads used heavily during construction) may also warrant inclusion depending on potential impacts. This VEC also includes the global climate, including energy usage, greenhouse gas emissions, carbon storage and sequestration, and local and global climate regulation.	Air quality impacts of the operations will endure for the lifetime of the project until decommissioning. Impacts from temporary facilities are shorter-lived but affected airsheds may warrant inclusion, pending further investigation. Climate change: Every source of GHG emissions is a contributor to the cumulative impact on this VEC	Regulating	Construction stage: The air AOI will encompass affected airsheds (principally at risk from airborne dusts) arising from pipeline construction, AGIs, camps and access roads to an approximate 330-m radius of the project activity. Construction activities, such as incinerators at construction camps, may have a larger AOI of up to 3-km radius from the source. Operation stage: The air AOI will be the geographical area directly affected or at risk from the operational activities including any accident scenarios. A provisional AOI of 3-km radius around AGIs with combustion plant is proposed. Cumulative impacts: The AOI will encompass the likely range of combined impacts resulting from the project in addition to other development. Climate change effects occur on a global scale and the AOI cannot be further defined.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Acoustic environment	The health and wellbeing of humans and local fauna is associated with the ambient sound level in the area of their inhabitancy.	Noise is unwanted sound created from construction of the pipeline, AGIs, access roads and camp construction plus use of worksites and existing roads for access; and operation of permanent camps and AGIs during the operational phase.	N/A	Construction stage: The transient but consistent nature of pipeline construction activities means that a linear buffer set at a specified distance from the pipeline can be used as the AOI. This buffer is likely to be 250–500 m for noise and 25–100 m for vibration. The AOI for AGIs and temporary facilities will be similar, although the more varied and nonconsistent nature of construction on these sites means that the AOI extent may not be the same in all directions. The AOI will not be related to the magnitude of the noise and the relationship between duration of works, time of works and noise character. Operation stage: The AOI will be linked to the magnitude of emissions, duration of operation, noise character and the hours of operation. Noise emissions will be limited largely to the AGIs and will be established for each AGI depending on the equipment to be installed as the emissions and type of noise, for example between a pump station and a pig launcher, are different. The vibration AOI for the operational phase is likely to be very small, as operational activities are unlikely to be associated with significant vibration. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Archaeology and Cultural Heritage				
Tangible and intangible cultural heritage	Tangible cultural heritage sites include: • archaeological sites and features • paleaoarchaeological sites and features • important fossil sites • memorials • cemeteries and graves • battlefields • abandoned settlements • World Heritage Sites • military fortifications • rock art • early industrial sites. Intangible cultural heritage sites are locations that are the focus for social practice and valued by local communities over and above their recognised physical heritage value. These sites may also have a setting or other value that could potentially be affected, including ethically or spiritually important landscapes, mountains, rivers and places of worship.	Project impacts on archaeological and cultural heritage VECs could occur from-construction: project and cumulative construction or operational impacts from pollution, vibration, direct physical disturbance, change in the visual aspect of the site, or disruption or blockage of access. Indirect (visual) cumulative impacts on the settings of assets may occur during the project's construction phase and the subsequent operation of AGIs. The sites will have to be sufficiently large or have group value to be able to sustain cumulative impacts from the project and other developments or processes. VECs with important intangible cultural heritage value may be subject to impacts from the project.	Cultural	Construction stage: The AOI for tangible cultural heritage will encompass the project footprint plus a small area, provisionally 25–100 m, for impacts resulting from vibration. The AOI for intangible cultural heritage will be defined on an individual basis but a provisional 2-km AOI is proposed to identify potential receptors. Operation stage: The AOI will encompass the operational project footprint. The AOI for impacts resulting from vibration is likely to be very small, as operational activities are unlikely to be associated with significant vibration. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Socio-economic and Health				
Economy and standard of living	This VEC considers direct and indirect employment, suppliers of goods and services to the project and community, and their ability to afford more goods and services, the economic effects of in-migration, and the increased payment of taxes.	The project will create direct or indirect employment. Increased incomes resulting from employment may improve households' standards of living and increase purchasing capacity. Increased household incomes may help support children to complete schooling, but economic opportunities could also prompt some children to end education in favour of work. Wider indirect associated economic development activities may occur that may be positive (e.g., new jobs) or negative (e.g., because of inflation or in-migration). Those affected would be the active population, particularly those near the construction camps.	N/A	Construction stage: The AOI will include the main settlements and population centres likely to supply local construction labour, goods and services as well as settlements where money is spent, e.g., by the construction workforce and in-migrants. Significant impacts are not expected at national level during construction but if any are identified, they will be considered. Operation stage: The main benefits during the operations phase will be at national and regional scales. At local level, the AOI will be centred on the permanent facilities supplying goods, services and workers. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.
Workforce	This VEC considers workforce (both national and international) capability, skills, welfare and human rights.	The project will have a potential positive impact from on-the-job training during the construction phase, which may enhance future employment opportunities for those who received training. There will also be workforce benefits during project operation. Those affected would be the active population, particularly those near the construction camps.	N/A	Construction stage: The AOI during construction will be regional and national because of capacity building. At local level, the AOI will include settlements and population centres likely to supply local construction labour. Operation stage: The AOI will include settlements likely to be in commuting distance of the operational workforce. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Infrastructure	This VEC covers physical and social infrastructure such as access to utilities, waste services, roads, paths, schools, meeting places and gathering places.	The project could affect physical and social infrastructure. Changes in accessibility may cause induced development.	N/A	Construction stage: The AOI will include settlements and population centres likely to be directly or indirectly affected by the works, including near construction camps, and associated roads and access, if they impinge directly or indirectly on the local population (including benefits from improved access or investment in and upgrading of local infrastructure). The AOI for waste will also be affected by the location of proposed waste management and disposal sites to be used by the project. Operation stage: The AOI will include settlements or populations that may be affected adversely, for instance by the altering of usual transport routes or restricted access to certain areas, or that may indirectly benefit for infrastructure improvements especially transport route upgrades. The AOI for waste will also be affected by the location of proposed waste management and disposal sites to be used by the project. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Community health	This VEC includes human health, access to health services, safe drinking water and sanitation.	The project activities could affect accessibility of health services. In-migration and the presence of temporary workers may lead to increased demand for health services and put pressure on local health resources. Inflation in prices linked to oil development may affect some people's ability to afford healthcare. There may be an increase in sanitation and hygiene-related diseases owing to low capacity to deal with high levels of increased waste from influx. Third-country national and migrant workers may introduce infectious diseases, including sexually transmitted diseases and tuberculosis. Camp facilities may be conducive to the spread of malaria and other infectious diseases. There will also be benefits generated from higher incomes potentially resulting in better nutrition and ability to afford health care. Those affected would be the population near the construction camps, access routes and other project activities.	Provisioning; Regulating	Construction stage: The AOI will include settlements and population centres likely to be in contact with the construction workforce either at site or in local population centres, including near construction camps, or areas affected by overloading of existing health facilities or benefitting from investment in new health facilities. Operation stage: The AOI will include settlements or populations that may be in contact directly or indirectly with the operational workforce, for instance in daily commuting distance or affected by changes in local health infrastructure and resources. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments. See also the AOI for surface water and groundwater

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Land-based livelihoods	Provisioning ecosystem services, e.g., beekeeping, bush meat, mining, forest products, crop land, grazing land and productive land use	The project land requirements may have an impact on those who make a living from land-based activities, i.e., from resettlement, economic displacement and compensation benefits.	Provisioning; Regulating; Cultural	Construction stage: The AOI will encompass the project footprint arising from the pipeline working width, AGIs, pigging stations, construction camps and access roads. The AOI will need to include managed areas sensitive to indirect impacts such as deposition of airborne dust or dispersion of pollutants that could affect livelihoods and economic return for the land. Operation stage: The AOI would include all managed areas and sensitive areas directly or indirectly affected or at risk from the project and its activities or else likely to indirectly benefit from, e.g., improved regional transport network or access to markets. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Land and property	This VEC covers land ownership and includes physical resettlement and impacts of speculation. The communities affected will be those affected by temporary or permanent loss of land.	In-migration, increased incomes and requirements for land for major projects and other developments could increase demand for land and residential property and increase prices. While this may benefit owners of land and property, it would create negative impacts for those renting land and property. Access to land may be affected further by increased individualisation and privatisation of land meaning loss of access to customary and communal land, and misuse of compensation payments (not investing in replacement land). Cumulative effects could result from loss of land, changes in land tenure, property speculation, and land price inflation.	Provisioning	Construction and operation stages: The AOI will extend to areas of land directly affected by the project footprint, including any areas temporarily required. Areas required for resettlement will also need to be included, as well as any neighbouring areas that may experience indirect impacts. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.
Recreation and ecotourism	Owners and managers of tourism facilities, including camps, lodges and designated ‘tourist’ sites and businesses	Impacts on tourism facilities may negatively affect those who make a living from tourism and those who enjoy them.	Cultural	Construction stage: The AOI will encompass areas from which the permanent and temporary project footprint is visible, areas where customary routes may be affected and areas where disturbance may affect wildlife. Operation stage: The AOI will include areas from which the permanent project footprint is visible. A larger AOI will be considered for accidental events. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Community safety, security and welfare	This VEC considers the safety, security and welfare of communities, including community stability and cohesion, cultural identity, gender equality and human rights.	Impacts could occur from increased road traffic from project, camps and other developments, construction activity, e.g., open trenches and the use of equipment and vehicles, or anti-social behaviour and crime linked to in-migration and opening of access roads. There may also be effects on ecosystem services, i.e., natural hazard regulation for flood control or seismic activity. Those affected would be communities near public roads used for project activities and project worksites and near AGIs.	N/A	Construction and operation stages: The AOI will extend to areas of land directly affected by the project footprint, including any areas temporarily required. Areas required for resettlement will also need to be included, as well as any neighbouring areas that may experience indirect impacts such as from migrant worker influx. Cumulative impacts: The AOI would encompass the likely range of combined impacts resulting from the project in addition to other developments.
Traffic	This VEC considers congestion and disruption of traffic patterns.	Project and cumulative effects could occur from increased road traffic from multiple developments.	N/A	Construction stage: The AOI would include the main construction routes. Operation stage: The AOI would include any new roads or links and off-site highway improvements where traffic congestion and accident risk may change significantly. Cumulative impacts: The AOI would cover the same extent but would include additional traffic from other developments.
Demographics	This VEC considers population size and structure, and in-migration.	The project will have an impact on the economy, standard of living and infrastructure. This could cause changes in the population growth and structure caused by in-migration and the potential for increased births because of increased wealth.	N/A	Construction and operation stages: The AOI will extend to settlements or populations directly or indirectly affected by the movement of construction and operation workforce and the communities positively affected by the project. Cumulative impacts: The AOI would be the same but would include the combined effects with other developments.

VEC	Description	Rationale for Inclusion	Ecosystem Service Type	Potential Area of Influence [1]
Fisheries	This VEC considers river fisheries, including aquaculture, commercial and artisanal fishing sectors, consideration of primary and secondary economics (e.g., selling at markets, processing) and nonfood use of products, e.g., curios.	Project and cumulative effects on inshore freshwater fisheries could occur from in-migration, greater access and compensation used to fund fishing gear. Potential beneficial project and cumulative effects could result from alternative employment opportunities, and greater income to purchase fish.	Provisioning	Construction and operation stages: The AOI would include areas of freshwater (and any associated land-based facilities) known to be of importance for fisheries and that may be directly or indirectly affected by the proposed development. Cumulative impacts: The same AOI would be used but any combined impacts with other projects would be included.

NOTE: [1] The construction phase minimum AOI for all VECs is the temporary and permanent project footprint (i.e., the pipeline working width, AGIs, construction camps and access roads) and all construction associated facilities (e.g., dedicated borrow pits, concrete batching plant). For the operation phase, the minimum AOI for all VECs is the permanent project footprint (i.e., the pipeline working width, AGIs, operation camps and permanent access roads). Abnormal and accidental events will have a greater AOI owing to the nature of the impact; the AOI will be further defined during the ESIA following baseline surveys and supplementary modelling.

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APPENDIX B STAKEHOLDERS AND INSTITUTIONS CONSULTED, AND CONTACT INFORMATION

Table B-1 National-Level Stakeholders Consulted

Meeting	Date	Contact Name	Position	Contact Details
Uganda National Oil Company (UNOC)	19 May 2017	Proscovia Nabbanja	Chief Operating Officer (Upstream)	
Uganda Electricity Transmission Company Limited (UETCL)	19 May 2017	Buhanga Boneventura	Manager of Planning and Investments	Email:Bonventura.buhanga@uetcl.com
National Environment Management Authority (NEMA)	22 May 2017	Turyahikayo Enid	Environmental Inspector	Tel: 256-414-251064 Email: info@nemaug.org
Petroleum Authority of Uganda (PAU), Ministry of Energy and Minerals Development (MEMD) and Directorate of Petroleum and MEMD	22 May 2017	Jane Byaruhanga	Government Officer	Tel: +256 (0)7 84 81 24 48 Email: j.byaruhanga@petroleum.go.ug
Department of Museums and Monuments, Ministry of Tourism, Wildlife and Antiquities (MTWA)	23 May 2017	Jackline Nyirayiza	Archaeologist	Tel: 0714644397 Email: jnyiracyiza@tourism.go.ug
Directorate of Employment and Occupational Health, Ministry of Gender, Labour and Social Development (MGLSD) and Directorate of MGLSD	23 May 2017	Karl Marx Musinguzi	Labour Officer	Tel: 0703044243
Directorate of Physical Planning and Urban Development, Ministry of Lands, Housing and Urban Development (MLHUD) and Chief Government Valuer's Office, MLHUD	24 May 2017	Jacquelyne Nnassuma	Sociologist	Email: jnnassuma@gmail.com
Uganda National Roads Authority (UNRA)	24 May 2017	Charles Mwesige	Environmental Scientist	

Table B-1 National-Level Stakeholders Consulted

Meeting	Date	Contact Name	Position	Contact Details
Uganda Wildlife Authority (UWA)	29 May 2017	Justine MNamara	Manager (EIA and Oil Monitoring)	
National Forestry Authority (NFA)	29 May 2017	Paul Buyerah Musamali	Director of Corporate affairs	Tel: 0772466569
Directorate of Water Resource Management (DWRM), Ministry of Water and Environment (MWE)	29 May 2017	Joseph Odoney	Water Officer	
Wetlands Management Department (WMD), MWE	2 June 2017	Richard Kyambadde	Principal Wetlands Officer	

Table B-2 NGOs Consulted

Meeting	Date	Contact Name	Position	Contact Details
Civil Society for Oil (CSCO[25])	1 June 2017	Evelyne Busingye	Programme Officer (Water and Biodiversity, IUCN)	

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
Buliisa	Buliisa District Health Authorities	19 April 2017	Rachel Kyohairwe	District Health Officer (DHO)	Tel: 0774841364 Email: raykyohairwe@gmail.com
	Buliisa District Technical Planning	3 May 2017	Agaba Kinene	Chairperson	Tel: 782913680

[25] Umbrella organisation for a consortium of national nongovernmental organisations

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
	Committee and Political Leaders		Simon		
	Butiaba Subcounty	3 May 2017	Mureebe Blair	District Planner	
	Serula A Village (Butiaba Subcounty)	3 May 2017	Julius Kibard	Chairperson	
	Ngwedo Subcounty	3 May 2017	Munange G Stephen Kaliisa	Chairperson	Tel: 0779723100
	Buliisa Subcounty	3 May 2017	Kubalirwa Nkuba	Chairperson	Tel: 0782441874
	Kabolwa Village (Buliisa Subcounty)	3 May 2017	Candia Moses	Chairperson	
	Biiso Subcounty	4 May 2017	Peter Okech	Chairperson	Tel: 782333379
	Kihungya Subcounty	4 May 2017	Isingoma Bihegu	Chairperson	Tel: 773277018
Hoima	Hoima District Health Authorities	19 April 2017	Frederick Byenume	District Health Planner	Tel: 0772495189 Email: byenume@yahoo.com
	Hoima District Technical Planning Committee and Political Leaders	4 May 2017	Chiche Benson	Vice Chairperson	
	Kigorobya Subcounty	8 May 2017	Patrick Barungi	Senior Assistant Secretary (SAS)	
	Kigorobya Town Council	4 May 2017	Byangire B. Joshua	Chairperson	Tel: 779724600
	Buseruka Subcounty	8 May 2017	Tinkamayire Ali	Chairperson	Tel: 772410677
	Bugambe Subcounty	5 May 2017	Nkuratiramunda Joseph	Chairperson	Tel: 782445183
	Rwamutonga Village (Bugambe Subcounty)	6 May 2017	Onzima J Aloysius	Chairperson	Tel: 777692702
	Buhimba Subcounty	5 May 2017	Magezi Johnson	Vice Chairperson	Tel: 779262848

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
	Kiziranfumbi Subcounty	9 May 2017	Mugenyi Ibrahim Juma	Chairperson	Tel: 772954951
	Butimba Village (Kiziranfumbi Subcounty)	6 May 2017	Tugumisiris Samuel	Chairperson	Tel: 782172938
Kakumiro	Kakumiro District Health Authorities	20 April 2017	Senteza Robert Augustine	DHO	Tel: 0702 393017 Email: sentezarobert@gmail.com
	Kakumiro District Technical Planning Committee and Political Leaders	4 May 2017	Peter Wasswa	Chairperson	Tel: 0704785628
	Nkooko Subcounty	5 May 2017	Hassan Musa	Chairperson	Tel: 0788067976
	Mpasaana Subcounty	8 May 2017	Evaristo B. Niwagaba	Chairperson	Tel: 0785369155
	Mpasaana Village (Mpasaana Subcounty)	6 May 2017	Andrew Kyamanywa	Chairperson	Tel: 775936054
	Kisiita Subcounty	5 May 2017	Jackson Alyampa	Chairperson	Tel: 0753366466
	Kisiita A Village (Kisiita Subcounty)	5 May 2017	Erias Kitabaluka	Chairperson	
Kyankwanzi	Kyankwanzi District Health Authorities	20 April 2017	Paul Okello	Assistant DHO	Tel: 0782455704 Email: ilagalapaul@gmail.com
	Kyankwanzi District Technical Planning Committee and Political Leaders	9 May 2017	Namanda Elizabeth	Chief Administrative Officer (CAO)	Tel: 772431680
	Ntwetwe Subcounty	10 May 2017	Tibanyendera Paul	Chairperson	Tel: 78337930
	Gayaza Subcounty	10 May 2017	Faiabuholo Maiia	Parish Councillor	
	Kisala West Village (Gayaza Subcounty)	11 May 2017	Daniel Barebwoha	Vice Chairperson	

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
	Nzoo Village (Gayaza Subcounty)	11 May 2017	Kazibwe Ronald	Chairperson	Tel: 753135926
Mubende	Mubende District Health Authorities	20 April 2017	Wilson Mubim	DHO	Tel: 0772670556 Email: mubimwh@gmail.com
	Mubende District Technical Planning Committee and Political Leaders	9 May 2017	Charles Kiberu	CAO	Tel: 0772470371
	Kitenga Subcounty	10 May 2017	Edward Gamba	Chairperson	Tel: 772748311
	Nalyankajja Village (Kitenga Subcounty)	11 May 2017	Robert Tumusiime	Chairperson	Tel: 0754672929
	Madudu Subcounty	10 May 2017	Rosette Namakula	Vice Chairperson	Tel: 778869049
	Butoloogo Subcounty	11 May 2017	Milton Musiime	Chairperson	Tel: 774055312
	Kisagazi Village (Butoloogo Subcounty)	12 May 2017	Charles Mugwanya	Chairperson	
Gomba	Gomba District Health Authorities	24 April 2017	Christine Kahunzire	Assistant DHO	Tel: 0772315987 Email: kahunzire@yahoo.co.uk
	Gomba District Technical Planning Committee and Political Leaders	16 May 2017	Akileng Simon Peter	Deputy CAO	Tel: 772610655
	Maddu Subcounty	12 May 2017	Vincent Mugenyi	Chairperson	Tel: 701292367
	Kyetume Village (Maddu Subcounty)	13 May 2017	Edward Mugabi	Chairperson	

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
Sembabule	Sembabule District Health Authorities	26 April 2017	Charles Matovu	DHO	Email address: matovucharl@yahoo.com
	Sembabule District Technical Planning Committee and Political Leaders	16 May 2017	Bataringaya Willy	CAO	Tel: 772656997 Email: wbataringaya@yahoo.com
	Sembabule Town Council	15 May 2017	Kasekende Jude	Chairperson	Tel: 752598743
	Mijwala Subcounty	15 May 2017	Mwesigwa John	Chairperson	Tel: 752452604
	Lugusulu Subcounty	12 May 2017	Moses Mulindwa	Community Development Officer	Tel: 757801123
	Mabale Village (Lugusulu Subcounty)	13 May 2017	Mwebaze Fred	Chairperson	Tel: 755968462
	Lwebitakuli Subcounty	12 May 2017	Senyonjo Akabwai	Chairperson	Tel: 751840551
	Lutilwanjuki Village (Lwebitakuli Subcounty)	19 May 2017	Nicholas Bagala	Chairperson	Tel: 756565445
Lwengo	Lwengo District Health Authorities	25 April 2017	Joseph Mutyogoma	DHO	Tel: 0702 656176 Email: joemutyox@yahoo.com
	Lwengo District Technical Planning Committee and Political Leaders	17 May 2017	Godfrey Kuruhiira	CAO	Tel: 772859456
	Lwengo Subcounty	15 May 2017	Paul Nsubuga	SAS	Tel: 0701747592
	Lwengo Town Council	15 May 2017	Noor Ssembatya	Councillor	Tel: 0702604102
	Kinvunikidde Village (Lwengo Subcounty)	13 May 2017	Edward Lukyamuzi	Chairperson	
	Ndagwe Subcounty	16 May 2017	Robert Yiga	Chairperson	Tel: 784899026

Table B-3 Local-Level Stakeholders Consulted

District	Meeting	Date	Contact Name	Position	Contact Details
Rakai	Rakai District Health Authorities	27 April 2017	Judith Nakayote	Biostatistician	Tel: 0704970824 Email: marionjudith83@gmail.com
	Rakai District Technical Planning Committee and Political Leaders	18 May 2017	Samomon Ssonko	CAO	Email: sonkosca@gmail.com
	Lwanda Subcounty	16 May 2017	Charles Muliira	Chairperson	Tel: 782937349
	Kifamba Subcounty	17 May 2017	Lubega Pius	Chairperson	Tel: 772486762
	Kakuuto Subcounty	17 May 2017	Harriet Nabbala	SAS	Tel: 0772312437
	Lukooma Village (Kakuuto Subcounty)	18 May 2017	Lukyamuzi Lawrence	Chairperson	Tel: 773378200
	Kasaali Subcounty	17 May 2017	Godfrey Kimera	Chairperson	Tel: 772382294
	Kasasa Subcounty	18 May 2017	Timothy Mbazira	Chairperson	Tel: 772398485
	Kamuli Village (Kasasa Subcounty)	18 May 2017	Muhame Kayemba	Vice Chairperson	Tel: 782387059
	Nabigasa Subcounty	19 May 2017	Vincent Kibazzi Kibandi	Chairperson	Tel: 0701366792

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APPENDIX C SCOPING LEVEL STAKEHOLDER CONCERNS

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Socio-economic and Health			
Economy and standard of living	• Skills and technology transfer during the course of the project • How will Ugandans benefit from the project, e.g., number of jobs created, and the potential negative side effects of these benefits, e.g., those employed by the project may have less time for other commitments such as crop cultivation?	• Benefits for local people were explained in terms of employment opportunities, particularly during the construction phase.	Ministry of Gender, Labour and Social Development
Infrastructure	• How will material be transported during pipeline construction? • What are the plans of the projects for the construction and use of roads for maintenance purposes during the projects' operational phase?	• Stakeholders were advised that a previous study on infrastructure has identified gaps in the transport sector for the movement of project-associated materials and equipment and that this matter requires additional assessment. • Stakeholders were advised that a road adjacent to the pipeline would not be feasible and could damage sensitive environments.	Ministry of Works and Transport

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Influx	• Project-driven influx and movement of labour from one construction camp to another along the pipeline	• The majority of influx will be associated with the construction, rather than operational, phase. • Stakeholders were informed that movement of labour is inevitable for linear projects.	Ministry of Gender, Labour and Social Development Uganda Wildlife Authority (UWA)
Land and property	• Compensation following land acquisition with emphasis on compensation to stakeholders for loss of property, crops and access to land itself (both above- and underground) • The reduction of the 30-m construction corridor to 10-m during the operational phase of the project with emphasis on keeping the original 30-m corridor in place for export purposes	• Stakeholders were advised that maintaining the 30-m corridor during the pipeline operational phase would require justification on the projects' part.	Ministry of Works and Transport Uganda National Oil Company (UNOC)
Land acquisition and compensation	• Compensation needs to be carried out in a fair and timely manner • Land is a sensitive issue hence sensitisation of communities about the land acquisition process should be a continuous process • District compensation rates tend to be low and not updated for years. It's important the project makes sure a fair compensation process is carried out	• Stakeholders were informed that IFC principles will be applied together with national regulation in terms of compensation • Rates will be identified at a later stage during separate research.	NEMA Ministry of Lands, Housing and Urban Development Ministry of Gender, Labour and Social Development

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Workforce	• Ensuring equal opportunities during project recruitment, e.g., inclusion of women and people with disabilities	• Calls for equal opportunities were recorded for further consideration.	Ministry of Energy and Minerals Development (MEMD) UNOC Ministry of Works and Transport
Physical Environment			
Surface water: watercourses, wetlands and waterbodies (ephemeral and permanent)	• Emphasis on providing notice to affected stakeholders before water abstraction and surface water surveys • Ensuring that water obstructions do not result in flooding and associated danger to life and property	• Concerns of stakeholders in relation to surface water were recorded for further consideration.	Directorate of Water Resources Management (DWRM)
Biodiversity			
Habitats of conservation importance (terrestrial and aquatic)	• Ensure that not only area of the pipeline is studied but as well watercourses and wetlands which may potentially connect to protected areas, e.g., Sanga Bay, Lake Mburo • Emphasis on need to assess ecosystems which are habitats for species especially during the construction phase • Identification of biodiversity sensitive areas such as forests, wetlands, wildlife reserves within the pipeline route	• Concerns of stakeholders were recorded for further consideration and study in ESIA • Current ESIA role will be to assess the habitats and sensitive areas and their role in support of species • The mitigation hierarchy will be used throughout from design to operations and decommissioning.	UWA DWRM NFA

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Project and ESIA-Related			
ESIA studies and mitigation measures	• Loss of biodiversity in areas of endemism with questions around whether the projects can consider methods such as underground tunnelling to minimise impacts in such areas • Query on whether previous ESIA studies been conducted on a similar scale • Enquiry on the process for the technical review and delivery of the ESIA reports • Emphasis on conducting separate ESIAs for the feeder pipeline and main oil export pipeline	• Stakeholders were informed that the mitigation hierarchy would be implemented in the context of biodiversity, which may include rerouting of the pipeline or tunnelling using horizontal directional drilling. • Stakeholders were advised that experiences from other pipeline projects, such as those in India and China, would be drawn upon. • Technical reviews will be coordinated by NEMA, a workshop is planned, and the projects and RSK will make a presentation during the workshop to explain the scoping report and ToR and ESIA report after. • The concern about separate ESIAs was noted, it will be subject to dedicated discussions.	UWA UNOC NEMA MEMD DWRM

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Project information	• What are the energy sources for heating the pipeline? • What is the current status of the feeder pipeline? • What is the design for temporary facilities, pipe manufacturing, pipeline diameters and handling of crude oil at the marine storage terminal (MST) in Tanga? • What are the provisions for oil spill prevention? • Compliance with local content requirements was emphasised • It was suggested that a team of government review agencies be taken along the proposed pipeline route to better appreciate likely impacts • Recommendations surrounding procurement of bent pipes for certain sections of the pipeline route	• Stakeholders were informed that crude oil and diesel generators would heat the pipeline. Stakeholders were informed that conversion and transfer of ownership of temporary facilities would need to be managed properly. • Emphasis on participation of government review studies was noted with an assurance that this could be arranged during ESIA studies. • Pipeline diameters of both feeder and export pipelines were stated to be the same. • In terms of oil spill prevention, design of the pipeline and additional measures will allow detection of leaks at early stages.	Ministry of Internal Affairs National Environment Management Authority (NEMA) MEMD UNOC Ministry of Works and Transport
Stakeholder engagement (ESIA related)	• Recommendation to include different government agencies, UWA, Nature Uganda and Makerere University in stakeholder engagement and to conduct project awareness campaigns in parallel with ESIA studies • The social scope is too detailed and may provide baseline that is irrelevant to the project, e.g., human rights	• Recommendations to include particular stakeholders during stakeholder engagement and the need to conduct awareness campaigns in parallel with the ESIA studies were noted.	National Forest Authority (NFA) UWA

Table C-1 National Level

Topic	Concerns and Questions Raised	EACOP and RSK Responses	Stakeholders
Stakeholder engagement (project related)	• Project team to inform DWRM about which waterbodies will be crossed by the pipeline and which of these will be subject to open-cut method during construction.	• Details of streams and rivers affected by the project would be provided upon completion of geology and geophysical (G&G) surveys.	DWRM

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Socio-Economic and Health			
Community health	• Pipeline workers leaving behind pregnant women and fatherless children • Elevated cancer rates from polycyclic aromatic hydrocarbons (PAH) exposure and spillages • Recommendation to expedite pipeline construction to avoid constraining district health systems • How to best manage health services for pipeline workers	• Stakeholders were assured that possible project-related health impacts will be considered as part of the health impact assessment (HIA). • Stakeholders were informed that their concerns would become part of the HIA report and used to inform mitigation measures.	District Health Authorities of Gomba, Kakumiro, Kyankwanzi, Sembabule and Rakai Technical and Political Leaders of Gomba, Mubende and Rakai District

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Community safety, security and welfare	• Negative impacts of construction camps in affected districts particularly the spread of HIV and AIDS, breakdown of families, defilement, rape, commercial sex work and general sexual misbehaviour. How will these impacts be minimised?	• Stakeholders were assured that concerns would be included in HIA report. • Stakeholders were informed that clear management plans will be developed and implemented to manage potential social effects arising during construction.	District Health Authorities of Gomba Technical and Political Leaders of Gomba, Mubende and Rakai District
Economy and standard of living	• Questions about whether EACOP will procure supplies from local communities. Emphasis on equal share of benefits resulting from the project, e.g., a portion of oil revenues should be provided to affected districts	• Stakeholders were informed that the ESIA would recommend sourcing from local producers as far as possible. • Stakeholders were informed that there inquiry on share on benefits was noted	Technical and Political Leaders of Gomba District
Infrastructure	• How will existing roads be used? • What are the plans for construction of new roads for the project alongside the improvement of health facilities in project-affected areas?	• Stakeholders were advised that the project would use and maintain existing roads wherever possible. • Stakeholders were informed that ideas about improving health facilities would be shared with the project team for consideration.	Technical and Political Leaders of Kakumiro and Rakai District District Health Authorities of Lwengo

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
In-migration	• Impacts associated with large influx of people resulting from the project, i.e., disease outbreaks and strains on public health services and medicinal supplies. • How will EACOP support district health sectors to overcome these impacts? • How influx will be managed more generally	• Stakeholders were informed that the raised concerns would be incorporated into the HIA report and used to develop mitigation measures.	District Health Authorities of Gomba, Sembabule and Rakai
Land and property	• How much land will be taken and where? • How will displacement of local people and compensation for loss of land and communal assets be managed? • Owing to the shortage of available land, a recommendation was made to route the pipeline route through national wildlife reserves. • Will there be loss of natural resources (wood, water, grazing land) because of pipeline construction?	• The stakeholders were informed the project will require 30 m during construction but this will reduce to 10 m during operation • Stakeholders were advised that resettlement procedures would be followed in accordance with national and IFC guidelines. • Stakeholders were further advised that resettlement would be avoided as far as possible in accordance with international best practice. • Stakeholders were informed that specific details about compensation are yet to be determined but that specific teams on the project will be tasked with dealing with this issue.	District Health Authorities of Gomba and Mubende Technical and Political Leaders of Kyankwanzi, Kakumiro and Rakai District

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Workforce	• Compliance with national content requirements and ensuring the employment of local people wherever possible • How will skilled and unskilled local people be included in the project? • Will there be future training opportunities?	• Stakeholders were assured that the project is committed to the employment of local people, capacity building and training where possible. • Stakeholders were informed that the project will generate a large number of short-term jobs, for both skilled and unskilled personnel, and a limited number of jobs during operations.	District Health Authorities of Kakumiro Technical and Political Leaders of Kakumiro, Gomba and Mubende District
Archaeology and Cultural Heritage			
Tangible and intangible cultural heritage	• Treatment of cultural sites affected by the project	• Stakeholders were informed that specialist teams will record and map culturally sensitive areas and develop management plans to deal with their treatment.	Technical and Political Leaders of Hoima District
Physical Environment			
Air quality and climate change	• Environmental degradation as a result of pipeline construction and questions about types of gases that may be emitted, • What is the correlation between changing weather patterns and discovery of oil? • Adverse environmental impacts will not be mitigated appropriately	• Stakeholders were advised that environmental impacts will be examined and mitigation measures developed as part of the ESIA process. • Stakeholders were informed that currently there is no proof of correlation between changing weather patterns and Ugandan oil discoveries	District Health Authorities of Kakumiro and Kyankwanzi

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Surface water: watercourses, wetlands and waterbodies (ephemeral and permanent)	• How will the pipeline cross waterbodies?	• It was explained to stakeholders that where the pipeline crosses wetlands and waterbodies, these will be restored in environmentally appropriate ways and disturbance minimised.	Technical and Political Leaders of Kyanwanzi District
Soils	• Will the heated pipeline have negative impact on ground conditions?	• Stakeholders were informed that this is not the first heated pipeline in the world. Reference made to examples of heated pipeline. • Stakeholders were assured that the technology (insulation) used to construct the pipeline would contain the heat and therefore not impact on humans, animals and crops	Technical and Political Leaders of Hoima District
Biodiversity			
Flora and fauna species of conservation importance (terrestrial and aquatic)	• Damage to the unique environment in the project area from the project	• Stakeholders were informed that ESIA specialist studies will be undertaken to study the biodiversity and biophysical environment, and a mitigation hierarchy will be used to avoid, minimise, restore and if necessary, offset any identified negative impacts.	Technical and Political Leaders of Hoima District

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Habitats of conservation importance (terrestrial and aquatic)	• How will the project affect wetland areas?	• Stakeholders were advised that studies will be conducted by specialist teams to identify potential project impacts on the physical environment including wetland areas and to guide the design of mitigation measures.	Technical and Political Leaders of Mubende District
Legally protected, and internationally recognised areas	• The pipeline route should be through national wildlife reserves due to lack of human settlements there and shortage of land elsewhere	• The IFC standards were explained to stakeholders, and it was emphasised that biodiversity hotspots will be avoided as much as possible in this context.	Technical and Political Leaders of Buliisa District
Project and ESIA-Related			
ESIA studies and mitigation measures	• What types of surveys will be conducted and what will be their duration? • How prepared is EACOP to mitigate likely project impacts and possible mitigation measures?	• Stakeholders were assured that EACOP will be prepared and equipped to mitigate project impacts. • Stakeholders were informed that possible mitigation measures will be developed in the next phases of the ESIA process.	District Health Authorities of Sembabule Technical and Political Leaders of Kakumiro District

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Project information	• What is the total number of pipelines associated with the project and what are the 30-m and 10-m right-of-way? • What will be the exact pipeline route? • Which parties are responsible for establishing the pipeline corridor, project timeline (start and duration of construction) and pipeline infrastructure (wellheads, trench, water intake stations)?	• It was explained to stakeholders that a 30-m right-of-way will be required for the construction of the pipeline and that this may be reduced to 10-m during the operational phase. • Responsible parties identified were EACOP, the Government of Uganda and Consultant	District Health Authorities of Rakai Technical and Political Leaders of Gomba, Rakai and Kyankwanzi District
Stakeholder engagement (ESIA related)	• What will be the feedback mechanism including access to project documents (hard and soft copies) (scoping reports, stakeholder engagement plan, ESIA reports) and which stakeholders are being consulted? • The inclusion of additional stakeholders in the next project phase (town councils, politicians) and the conduct of future engagements (provisions in terms of lunch and transport refunds, use of local languages at subcounty and community levels and involvement of local leaders) was recommended • Regular meetings throughout the project lifecycle were requested	• Stakeholders were informed that there is set criteria for selecting stakeholders and the next phase of the ESIA will focus on communities rather than districts and subcounties. • Stakeholders were advised that findings would be collated and provided to them in June or July 2017. • Stakeholders were informed that those identified as key stakeholders would be consulted throughout the ESIA process. • Recommendations were received with thanks and recorded for further consideration.	District Health Authorities of Lwengo, Kakumiro, Kywankwanzi, Sembabule, Mubende Technical and Political Leaders of Kyankwanzi, Kakumiro, Gomba, Mubende, Rakai District

Table C-2 District Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Stakeholder engagement (project related)	• Communities are anxious about the project (both positive and negative impacts) and have big expectations. • What are the next steps for the project?	• High expectations and anxiety surrounding project noted. • Stakeholders were informed that the next steps would involve the finalisation of the scoping phase by the end of June and the start of baseline studies in August or September 2017.	Technical and Political Leaders of Mubende, Kyankwanzi District District Health Authorities of Hoima

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Socio-Economic and Health			
Community health	• Will the project create health impacts such as hearing damage, an increase in prevalence of HIV and AIDs, elevated cancer rates, contaminated water supplies, strained local health services and how will the project mitigate these impacts, e.g., ensuring sufficient volumes of drugs are stocked in health centres?	• Stakeholders were assured that the ESIA would conduct a HIA and develop an associated management plan to minimise health risks associated with construction camps. • Stakeholders were informed that the HIA would evaluate the current capacity of government-run health centres.	Technical and Political Leaders of Luguusulu and Mpasaana Subcounty Lwengo Town Council

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Community safety, security and welfare	• Pipeline bursting and people falling into trench during construction • Construction workers impregnating women, engaging in illegal sexual acts and leaving fatherless children behind • Construction camps depleting local resources and land demarcation resulting in local conflicts • What mitigation measures will be put in place to ensure safety of the population in project area and security of the pipeline? • How will waste generated from construction activities be disposed of? • Emphasis on involving women and children in resettlement and compensation procedures	• During construction phase, safety signs will be put up at the work site and the area will be fenced off to prevent children and animals from falling into the trenches. • Stakeholders concerns, particularly in relation to construction camps, were acknowledged. • Stakeholders were informed that strict codes of conduct that will be implemented in construction camps. • Stakeholders were informed about the grievance mechanism that will be established to ensure that concerns can be lodged and dealt with accordingly. • Stakeholders were reassured that safety issues linked to influx will be examined in impact assessment studies and given full consideration.	Technical and Political Leaders of Kisiita, Mpasaana, Madudu and Lwanda Subcounty Lwengo Town Council

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Economy and standard of living	• What are the economic benefits of project for affected districts? • What will employment opportunities be (number and type of jobs to be created)? • Will there be other benefits (health clinics)? • What will the recruitment process look like? • Will there be procurement of local supplies in project area? • Can local people become custodians of the pipeline?	• Stakeholders were assured that the ESIA would recommend the use of local workers and contractors through training programmes, creation of direct and indirect employment opportunities for local people and procurement of local goods and services. • Stakeholders were informed that the pipeline will generate many short-term jobs (during construction) and a limited number of jobs during operation (less than 1000) and that both skilled and unskilled people will be required for these jobs. • Stakeholders were informed that details regarding recruitment processes would be disclosed at the appropriate time and that information about job opportunities would be advertised to Ugandans first.	Technical and Political Leaders of Buhimba, Kiziranfumbi, Gayaza, Lwebitakuli, Kisiita, Mpasaana, Kitenga, Madudu, Maddu and Lwengo Subcounty Sembabule Town Council
Infrastructure	• Will there be upgrading of existing infrastructure to support pipeline construction (roads, health centres) • How will EACOP deal with disruption to access roads?	• Stakeholders were informed that there are plans to upgrade, or at least maintain, roads that will need to be used by the project, but that there are no confirmed plans to upgrade other facilities.	Technical and Political Leaders of Gayaza, Kisiita, Nkooko, Mpasaana, Kitenga and Lwanda Subcounty

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Land and property	• What land will be required for the project and how will land acquisition will be managed? • What will the compensation process look like (who will be compensated, compensation process, how compensation rates will differ according to land ownership titles, whether both the 30-m and 10-m corridor will be compensated for)? • What will the resettlement process look like (will vulnerable groups be given special consideration, will economic activities of people be accounted for)? • Level and kind of disruption and displacement to expect • Land values set at district level are unfair and valuers often cheat local people leading to conflicts and disagreements • Emphasis on ensuring that all family members are involved when determining compensation to avoid the exclusion of women and children	• Stakeholders were informed that they would be eligible for compensation if EACOP requires their land for pipeline operations. • Stakeholders were also informed that the process of RAP will take place where project-affected people will be notified and the process of land acquisition takes place during this process • Stakeholders were assured that the rights of both landowners and land users would be considered for compensation consistent with national legislation and international standards. • Stakeholders were promised that compensation would be paid in a fair and timely manner. • It was explained that there would be temporary land acquisition for the 30-m corridor and permanent land acquisition for the permanent aboveground installations (AGIs) such as pump stations and block valves. • Complaints about unfair land values and the importance of involving all family members in the compensation process were acknowledged and noted.	Technical and Political Leaders of Buhimba, Gayaza, Luguusulu, Lwebitakuli, Kisiita, Kakuuto, Kifamba, Mpasaana, Madudu, Maddu, Lwengo, Lwanda and Ndagwe Subcounty Sembabule Town Council Lwengo Town Council

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Land-based livelihoods	• Will local people be able to grow crops and construct houses above the land where the pipeline is buried? • Will the project impact on soil fertility and will crops be destroyed during, or as a result of, pipeline construction? • Will livelihood restoration cover all socio-economic activities (particularly those of cattle grazers, firewood gatherers)? • What initiatives are planned to replace damaged vegetation and trees and how will the project affect water systems and fisheries?	• Stakeholders were informed that they would not be able to build structures or plant deep-rooted shrubs and trees above the pipeline but that shallow-rooted plants will be permitted[26]. • Stakeholders were informed that the project does not affect soil fertility and all crops that will be destroyed as a result of construction will be compensated. • Stakeholders were assured that livelihood restoration measures would be implemented in parallel to compensation or resettlement and in accordance with international standards. • Stakeholders were further assured that the project team would avoid water sources and fisheries wherever possible and, where unavoidable, mitigate the potential impacts.	Technical and Political Leaders of Buhimba, Kiziranfumbi, Mpasaana, Kitenga, Maddu, Lwanda and Ndagwe Subcounty Sembabule Town Council

[26] This information has been superseded by more up-to-date information. Stakeholders were also informed that since the project was still in the design phase project requirements could still change and that these changes would be communicated at the appropriate time.

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Workforce	• Will those working in construction camps require drugs and medical aid from local health facilities? How will local communities meet increased demands in terms of food production? • Compliance with local content requirements and opportunities for local people to benefit from the project. • Emphasis on involving the community with regards to jobs and businesses • Local leaders are to be involved in the project recruitment process for casual workers.	• Stakeholders informed that construction camps will be self-contained with medical facilities, drugs and medical equipment to avoid burden on local health services. • Stakeholders were assured the project will be emphasising local content and employment opportunities for affected persons. • Stakeholders were assured that comments about the involvement of local leadership in recruitment of casual labourers would be communicated to the project.	Technical and Political Leaders of Kiziranfumbi, Gayaza and Lwengo Subcounty
Archaeology and Cultural Heritage			
Tangible and intangible cultural heritage	• How will peoples' cultural heritage be protected if affected by the project?	• Stakeholders were informed that specialist studies will identify cultural and other sensitive sites and that plans will be developed for identification, avoidance and potential mitigation.	Technical and Political Leaders of Biiso Subcounty
Biodiversity			
Habitats of conservation importance	• Fish in Lake Albert will be affected by operations during pipeline construction	• Stakeholders were advised that pipeline construction will not affect fish but that a consultant will evaluate the potential of indirect impacts on fish.	Technical and Political Leaders of Biiso Subcounty

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Physical Environment			
Air quality and climate change	• What are the mitigation measures for climate change? • Will the project pollute the environment, disturb rainfall patterns and cause a drought? • Will the project increase heat levels in some districts leading to questions about interventions to mitigate this?	• The ESIA will undertake specialist studies to examine potential impacts from air emissions and climate change on the physical environment so that appropriate mitigation measures can be identified. • Stakeholders were assured that the project is committed to having as minimal an impact on the environment as possible.	Technical and Political Leaders of Lugusulu Subcounty
Noise levels	• How will the project address noise pollution during pipeline construction?	• Stakeholders were informed that noise and disruption would only take place for a short time, as the pipeline will be built in sections. • The possible mitigation measures against noise were described in terms of restricting working times to daylight hours and using buffers for sensitive locations.	Sembabule Town Council

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Surface water: watercourses, wetlands and waterbodies (ephemeral and permanent)	• Leakages into Lake Victoria, rivers and other water sources may be affected during pipeline construction • How will local communities be helped in water-stressed areas during pipeline construction	• Stakeholders were assured that materials used for pipelines are safe and do not corrode or leak. • Stakeholders were informed that there would be emergency response plans that would be implemented to manage leakages and other emergency events. • Stakeholders were further informed that any damages to or loss of existing water sources during construction will be repaired or alternative water sources will be provided.	Technical and Political Leaders of Kakuuto and Maddu and Kitenga Subcounty
Soils	• The project may damage soil fertility.	• Stakeholders were advised that the pipeline would be insulated to ensure that practically no heat would be emitted. • Stakeholders were further advised that the underground pipe will not damage soil fertility or the ability of crops to grow.	Technical and Political Leaders of Kihungya Subcounty
Biodiversity			
Flora and fauna species of conservation importance (terrestrial and aquatic)	• The presence of non-indigenous trees may result in increased water consumption • Indigenous trees should be replanted if non-indigenous trees are removed during pipeline construction	Comments of stakeholders were noted for further consideration.	Technical and Political Leaders of Kiziranfumbi Subcounty

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Project and ESIA-Related			
ESIA studies and mitigation measures	• What socio-economic and environmental mitigation measures will be put in place (for environmental preservation, to combat climate change)? • Is there an arrangement in the event that the pipeline breaks down? • Are spills expected to extend beyond the pipeline corridor? • Concerns were raised about the implementation of the ESIA based on past experiences	• Stakeholders were informed that mitigation measures will be proposed in the ESIA. • In the event if pipeline breaks down maintenance will be performed, In case of a spill, Spill response management plans will be applied • Stakeholders were further informed that, based on previous projects, the impacts of spills could extend beyond the pipeline corridor. • Stakeholders were assured that ESIA will also consider cumulative and transboundary impacts.	Technical and Political Leaders of Buhimba, Kakuuto, Kitenga, Madudu, Lwengo, Lwanda and Kisiita Subcounty Lwengo Town Council

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Project information	• Who are the project partners? • What are EACOP's corporate social responsibility (CSR) activities? • What does the right-of-way look like (particularly regarding size and implications for compensation, whether it will be permanent or temporary)? • Start and duration of project construction • How will the pipeline be heated? • What are the motivations for project and reasons for proposed pipeline route? • Recommendation that EACOP considers helping community to plant trees as one of CSR initiatives • Some political leaders pledged to sensitise communities about the project and offered support to the project	• The project target is to start operating the pipeline in 2020. • The pipeline route was explained in terms extensive route studies with the aim of finding the safest route, easiest to build and has the least impact on people and wildlife. • Stakeholders were informed that the project partners are Tullow, CNOOC, Total, the Government of Uganda and the Government of Tanzania. • The stakeholder recommendations regarding CSR initiatives will be reported to the project team.	Technical and Political Leaders of Buhimba, Lwebitakuli, Kisiita, Nkooko, Kakuuto, Kifamba, Kitenga, Maddu, Lwengo and Ndagwe Subcounty Sembabule Town Council Lwengo Town Council
Stakeholder engagement (ESIA related)	• Will the project have community liaison officers (CLOs), a grievance mechanism? • How will language barriers be overcome and how will the ESIA reports will be communicated to stakeholders? • Stakeholders emphasised the need to communicate with those affected by project land take in a timely manner.	• Stakeholders were informed that the project team intends to recruit CLOs that local people can be comfortable with and that recruitment recommendations for CLOs would be communicated to them. • The grievance mechanism was explained to stakeholders.	Technical and Political Leaders of Luguusulu, Lwebitakuli, Kakuuto, Kifamba and Madudu Subcounty

Table C-3 Subcounty Level

Topic	Concerns and Questions Raised	Responses	Stakeholders
Stakeholder engagement (project related)	• Stakeholders to be provided with as much information about the project as possible to be given out, i.e., maps indicating the pipeline route and corridor to leaders	• Stakeholders were informed that maps would be made available when the final pipeline route has been selected and authorisation has been given for the pipeline route to be made public.	Technical and Political Leaders of Kisiita and Nkooko Subcounty

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Socio-Economic and Health			
Community health	• What measures will be introduced to combat risk of HIV and AIDS spreading as a result of in-migration, and spread of dangerous emissions during construction? • Has the project considered disease outbreaks, water shortages and women being impregnated during project construction?	• Stakeholders were advised that plans would be designed to ensure proper management of emissions. • Stakeholders were informed that the ESIA process will develop measures and management plans to mitigate negative impacts.	Village Communities of Kisiita A, Mpasaana and Kinvunikidde

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Community safety, security and welfare	• Safety of women and girls in relation to construction workers • Safety of local communities during construction (due to blasting activities, increased road traffic). What are the distances between pipeline and settlements and communities?	• Stakeholders were informed that management plans will be designed to address the social challenges that may arise during the construction of the pipeline. • Stakeholders were further informed that contractors would survey blast radius and evacuate areas before blasting activities. • Stakeholders were informed that the ESIA and project will address traffic related risks in dedicated management plans.	Village communities of Kyetume, Butimba, Kisiita A, Mpasaana, Nalyankajja, Kyetume, Kisagazi and Kinvunikidde
Economy and standard of living	• Will goods for the project be purchased locally? • How will local people benefit from the project (training and employment opportunities)? • What are the criteria for selecting employees? • Will unskilled people be eligible for employment? • Will women will be considered for employment?	• Stakeholders were further advised that the project supports local procurement of goods and services • Project benefits were explained in terms of employment opportunities for both unskilled and skilled workers. • Stakeholders were advised that the project anticipates sourcing temporary workers locally from each county to promote the development of local content. • Stakeholders were assured that women would be considered for employment as well as men.	Village communities of Kisala West, Nzoo, Mabale, Kisiita A, Mpasaana, Nalyankajja, Kisagazi, Kinvunikidde, Kyetume, Lutilwanjuki and Lukooma

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Infrastructure	• Will infrastructure be developed in conjunction with the project (water supply, electricity, hospitals, schools, communications, irrigation)? • Will roads pass over the pipeline?	• Comments from stakeholders regarding the provision of facilities and improvement of infrastructure will be reported to the project team.	Village Communities of Butimba, Kisala West, Nzoo, Mpasaana and Lukooma
Land and property	• What will the compensation mechanism be (eligibility for compensation, how compensation will be made, length of time for payment to be made, applicable compensation rates, land valuation methods, how different groups will be treated such as landlords and tenants)? • What will consultations before land acquisition consist of, will land take be permanent or temporary and can land be used after construction (to grow crops, replant trees)? • What are the opportunities to contest land take? • What will happen to property and infrastructure within the 30-m right-of-way? • Will land above pipeline turn to wasteland or desert after construction or during operation? • Will construction vehicles damage properties due to their weight and noise?	• Stakeholders were advised that a resettlement action plan (RAP) would be completed in accordance with international standards, which requires compensation and/or resettlement equal to or better than previous conditions. • Stakeholders were assured that the project would work with the government to ensure fair resettlement and compensation activities. • Stakeholders were advised that every landholder and land user will be included in the RAP study and that land valuation will be determined using various methods and involve consultation. • Land restoration will be carried out after the construction phase to restore land to its previous state and the land can be used for growing seasonal crops and grazing after restoration. • A mitigation hierarchy will be used to avoid property and infrastructure within the 30-m right-of-way	Village communities of Butimba, Kisala West, Nzoo, Mabale, Kisiita A, Mpasaana, Nalyankajja, Kisagazi, Kinvunikidde, Kyetume, Lutilwanjuki and Lukooma

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Land-based livelihoods	• The pipeline may impact on crops and livestock • What is planned for land reinstatement after the pipeline is constructed? • What are the plans for pastoralists during the project construction phase? • Can people operate businesses in or near to construction camps?	• Stakeholders were advised that they should be able to grow crops and graze cattle (but not plant trees) within the 10-m corridor and above the pipeline once buried[27]. • Stakeholders were assured that that the heating of the pipeline will not affect the land because of the pipes' insulation and coating.	Village communities of Butimba, Nalyankajja, Kisagazi, Kinvunikidde and Kyetume
Archaeology and Cultural Heritage (Terrestrial and Marine)			
Tangible and intangible cultural heritage	• What will happen if pipeline route crosses graveyards and how will graveyards will be catered for? • What measures will be implemented in the event that burial sites or cultural sites are destroyed?	• Stakeholders were informed that if graves cannot be avoided, they would be relocated in accordance with the wishes of family members and local authorities. • Stakeholders were further advised that compensation for removal or relocation of graves and cemeteries will be carried out in accordance with national requirements.	Village communities of Nzoo and Kinvunikidde

[27] At this time this information has been superseded by more up-to-date information. Stakeholders were also informed that since the project was still in the design phase project requirements could still change and that these changes would be communicated at the appropriate time.

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Biodiversity			
Habitats of conservation importance (terrestrial and aquatic)	• Potential oil spills may destroy aquatic life in lakes and other waterbodies	• It was stated that ESIA studies will seek to understand the local physical environment and develop mitigation plans to assist with the management of emergency events such as oil spills. • Stakeholders were advised that crude oil is waxy and hence will not necessarily travel very far in the event of a spill.	Serula A Village Community
Physical Environment			
Air quality and climate change	• The heated pipeline may have a negative impact on local rainfall patterns. • What measures to prevent spread of harmful air emissions will be implemented?	• Stakeholders were advised that plans would be designed and implemented to manage negative environmental impacts of the pipeline, including air emissions.	Village communities of Kisiita A and Mpasaana
Groundwater	• Will the project destroy swamps and damage local water supplies? • What will happen if the pipeline intersects wells?	• Stakeholders were assured that oil spills are unlikely but that, in the event of an oil spill, the oil would not spread far due to its waxy nature. • Stakeholders were informed that an emergency response team would be mobilized to minimise damage from potential oil spills.	Village communities of Mpasaana and Lutilwanjuki

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Project and ESIA-Related			
ESIA studies and mitigation measures	• What management plans for mitigating negative project impacts, i.e. on the environment, will be developed?	• It was explained that various management plans will be developed to mitigate negative impacts including emergency response plans, mitigation hierarchies for biodiversity and social management plans for construction camps.	Village communities of Kisiita A
Project information	• What are the possible pipeline routes (number of potential routes particular villages affected)? • What is the project timeline? • Will there be safe zones? • What CSR initiatives are being planned? • What will the project right-of-way look like (width, whether permanent or temporary)? • How will damages to the pipeline be dealt with? • What is the Government of Uganda's plans for oil (why being exported, why selling crude rather than refined products, oil prices)? • Requests for maps displaying affected areas	• Stakeholders were informed that the width of the project right-of-way is 30 m for construction and 10 m for operation[28]. • Stakeholders were advised that the pipeline route is still being finalised; after this, the villages near the pipeline can be confirmed. • It was explained that Uganda must export oil because its domestic market is not large enough. • Stakeholders were advised that project would only commence after ESIA and G&G studies are complete, and NEMA has approved the ESIA.	Village communities of Butimba, Kisala West, Kisiita A, Nalyankajja, Kisagazi, Kinvunikidde, Kyetume, Lutilwanjuki and Lukooma

[28] At this time, this information has been superseded by more up-to-date information. Stakeholders were also informed that since the project was still in the design phase project requirements could still change and that these changes would be communicated at the appropriate time.

Table C-4 Village Local Council and Community Members

Topic	Concerns and Questions Raised	Responses	Relevant Stakeholders
Stakeholder engagement (ESIA related)	• Calls for future consultations to provide refreshments, transport allowances • Can future meetings include visual materials (e.g., DVDs containing information about the project) • CLOs and the grievance mechanism, who to trust in relation to the project, communication channels and stakeholders consulted • Emphasis on developing strong relationships between ESIA teams and local leaders	• Suggestion to include visual elements in future consultations will be implemented. • Request for refreshments and transport allowances were noted for consideration. • Stakeholders were advised that there are toll-free telephone lines available for those wishing to express grievances and concerns.	Village communities of Kisala West, Mabale, Mpasaana, Nalyankajja, Kisagazi, Kinvunikidde, Lutilwanjuki, Lukooma and Butimba

Table C-5 Traditional Leadership

Topic	Concerns, Issues and Questions Raised	Responses	Relevant Stakeholders
Project and ESIA-Related			
Project information	What will the project timeline be and key milestones alongside proposed pipeline route down to the parish level?	• Stakeholder were informed that the current scoping phase would end in June, after which baseline studies and impact assessment will take place and would be completed in November with the submission of the ESIA report to NEMA in 2018. • Stakeholders were advised that timelines may change.	Nsamba Felix Kabajjo (Muteesa – Mawogola, leader of Buganda on behalf of Kabak and Buganda Kingdom)

APPENDIX D RECORD OF STAKEHOLDER ENGAGEMENT

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
19 April 2017	LC5 - Local Government	Buliisa District Health Authorities	Female	District Health Officer (DHO)	When is the actual HIA survey and how long will it take?	This will be to communicate
			Female	District Health Officer (DHO)	How will compensation be managed?	We are unabl usually handl
			Male	Assistant District Health Officer (DHO)	Will local people be used on the pipeline project?	Most projects employment regarding this
			Female	District Health Officer (DHO)	Will stakeholders receive feedback regarding the surveys to be conducted?	It is customar ESHIA studie
19 April 2017	LC5 - Local Government	Hoima District Health Authorities	Male	District Health Inspector (DHI)	When is the project starting?	Certain proce the project.
			Male	District Health Inspector (DHI)	Is the pipeline going to pass under any lakes?	Not anticipate
			Male	District Planner	How will influx be managed when people come in looking for work?	Influx manag
			Male	District Planner	Are people on the pipeline route going to be displaced?	Depends on f will be better
			Male	District Planner	Communities are anxious about the project (both positive and negative)	Your commen within the pro
20 April 2017	LC5 - Local Government	Mubende District Health Authorities	Male	District Health Officer (DHO)	Consideration should be given to including community development officers, subcounty chiefs and health assistants in next phase of HIA.	The HIA tean DHMT on the
			Male	District Health Officer (DHO)	How will spillages be managed?	It is typical of environmenta these plans a
			Male	Biostatistician	How will compensation for land be handled?	We do not ha teams within
			Male	District Health Officer (DHO)	Will the DHMT (and other stakeholders) receive copies of the HIA?	Unfortunately the project.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	District Vector Control Officer (DVCO)	Do you have any project documents that you can share and leave behind with the meeting participants?	Unfortunately
			Male	District Vector Control Officer (DVCO)	Stakeholders have noticed changing weather patterns and droughts since oil has been discovered. Is there a correlation between the two?	Weather char No proof at p
24 April 2017	LC5 - Local Government	Gomba District Health Authorities	Female	Assistant District Health Officer (ADHO)	Is there a likelihood of getting support from EACOP for the health sector to cater for the large influx of people?	The company
			Female	Assistant District Health Officer (ADHO)	Will the health data for the people in the project camp be shared with the district health management team?	A system will with relevant
			Male	District Health Inspector (DHI)	Will there be compensation for the people whose land is affected by the EACOP?	Resettlement
			Male	District Health Inspector (DHI)	The DHMT is concerned about disease outbreaks as a result of the influx of people in the district	The pipeline the leakages situation.
			Male	District Health Inspector (DHI)	Will the DHMT be allowed access to the project camp health clinic?	We encourag the project st
25 April 2017	LC5 - Local Government	Lwengo District Health Authorities	Male	District Health Inspector (DHI)	Can the EACOP project help to improve the health facilities in the affected areas as part of CSR so that the people in those areas can also feel the impact of the project?	While the pro as part of CS pipeline will p with the proje
			Male	District Health Officer (DHO)	For future engagements on this project, we expect participants invited for the meetings to be provided with at least lunch and a transport refund. The previous stakeholder engagement by this project did not go well, as most people who were invited were not provided with lunch or a transport refund even when some of the people had travelled from the subcounty to the district level. People are complaining and planning to boycott any future meetings if this issue is not looked into.	The current g will be taken
			Male	District Health Inspector (DHI)	What is the plan to ensure that people will not build structures on top of the pipeline. How will you monitor the entire pipeline corridor?	A community pipeline corri

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	District Health Inspector (DHI)	If it is going to be a heated pipeline, how will you mitigate the hazard resulting from that heat on the ecosystem?	The pipeline and the heat vegetation. It the oil to flow
			Female	Biostatistician	If there is going to be a health camp for the pipeline workers? Will the data from the clinic be shared with the DHMT? Previously, the road construction people have not shared the health data from their camp despite having shared data collection forms with them.	We encourag request for th
27 April 2017	LC5 - Local Government	Rakai District Health Authorities	Male	Assistant District Health Officer (ADHO)	What will be the average duration of the pipeline construction in the district?	Average dura each district.
			Male	Assistant District Health Officer (ADHO)	After the construction of the pipeline, will the workers leave or stay in the district?	This is alway expected tha district.
			Male	Assistant District Health Officer (ADHO)	How will we manage to deliver health services to the increased number of people in the district? How will the pipeline project help us to mitigate that impact?	This concern consultation v
			Male	Assistant District Health Officer (ADHO)	How will we mitigate the likely increased social vices, e.g., commercial sex work, as a result of the pipeline project?	This concern consultation v
			Male	Assistant District Health Officer (ADHO)	The pipeline workers are likely to leave behind pregnant women and fatherless children.	This concern consultation v
			Male	Assistant District Health Officer (ADHO)	Will you provide a budget for the workshop in July/August? Otherwise, it will not be possible for the DHOs office to organise this workshop without facilitation, e.g., for communication and refreshments.	This concern
			Male	Assistant District Health Officer (ADHO)	Who will manage the health services for the pipeline workers?	The project w basic health s

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
3 May 2017	LC3 - Lower Local Government	Ngwedo Subcounty	Male	Senior Assistant Secretary (SAS) ("Sub-County Chief")	What about the line from the pad to the CPF? I do not understand the size of the RoW. Will all of the crops within the restricted area and pipeline corridor be compensated for?	The line from probably in th The size of th with the allow and where th be approxima All affected s crop compens
			Male	Parish Chief	Will there be full compensation for the 10 m? What sort of options do we have to be compensated for cultural sites within the 10 m? What is the safe distance allowed between the pipeline and any human settlement?	The way in w that the 10 m no deep-rooti maintenance Project Team acquired. Of Chief Govern Specialist stu mentioned. T sites and oth accordingly. The pipeline the 10 m, but
			Male	Chairperson	What plans are there to cater for the destroyed trees and vegetation within the acquired 30-m corridor acquired for construction? What happens to the land that is used for grazing and fire wood collection but falls within the acquired corridor?	Any areas us be rehabilitat relevant auth Also, during t firewood colle help, and ma that you are participate ar
			Male	Community Development Officer (CDO) - Sub-County (LC3)	Will the final 10-m pipeline corridor be acquired permanently or temporary? What mitigation measures are in place for safety aspects? How are the locals going to benefit from the pipeline project? What plans are there to mitigate against workers of the pipeline from engaging in illegal sexual acts and how will the fatherless children be handled by the project?	Safety measu effects; a safe will be approp process. There will be has placed ar information c The point of

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Chairperson	Land users here come from different countries for grazing, and grazing is shared, and firewood is also gathered and so how do you plan to handle this?	We will find o and then a sp team will disc time.
			Male	Parish Chief	We hope that there will be no adverse health effects from the operations of this pipeline.	Thank you, w available tech However, spe impacts have
			Male	Parish Chief	How will the medicinal plants that fall within the corridor be handled? How will the cattle grazers be catered for after the 30-m pipeline corridor is acquired for construction (what is the fate of cattle grazers)? We share grazing land with Chibwera Town Council. How will our neighbours be catered for? Why don't the neighbouring communities or families be given the responsibility of ensuring security for the pipeline instead of bringing foreigners to guard the pipeline?	This is noted, is that medici compensation This is noted,
			Male	Speaker	What will the impact be on our health? Will human beings not be affected by pollution from the pipeline and the activities?	There will be construction p damaging to There are no pipeline eithe have been co
			Male	Parish Chief	Machines will be used to do the construction, so how will locals benefit from this project in terms of job opportunities?	You're right, t but there will too, also envi cleaning part different area
			Male	Sec. For Environment	Why are political leaders not involved in the oil and gas activities and yet community members rely on them for information provision? Why are we not engaged each time?	It is always vi faster to their engagement the correct fe at various ap information th
			Male	Parish Chief	We request that people who live near the pipeline become custodians of the pipeline and become permanently employed through this.	Thank you fo provide feedb

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Parish Chief	Men will be so excited to see all of our young ladies around. This is already a news story in Ngwedo, from previous projects. We do not want to be left with children whose fathers are not known again.	We understar be developed
3 May 2017	LC3 - Lower Local Government	Butiaba Subcounty			Observations Uganda is building a refinery, why is there a need to build an export pipeline?	The Kabaale There is an e Kampala. Ou
					How can a local man directly benefit from the project?	The ESIA wil and will make recommende adopted.
			Male	Chairperson	I have a few concerns. The selection of the sites for the stakeholder engagement -what criteria was used to choose our village?	It is importan the pipeline w subcounties i of its proximit
					Which land will be taken? Will it be compensated?	The develope purchases th Whichever it resettlement Government fair way.
					The noise will be too much. You will be affected by the noise. Will it be the concern of the government?	Noise to put i will consist of and the ESIA the noise imp
					Where the pipeline passes, will you cut trees? What is your plan to replace them? We have few trees and there is a real need for the wood.	Your commer damage to pe ESIA will rec
					Some two years back, the MSL staff/exploration team did water surveys. Is there oil in Lake Albert?	The lake is se protected for large amount undertaken.
					For people to benefit from the resettlement the land needs to be valued at the same rate as Lwengo. What happens if we do not have a title? This is customary land here.	The district se scenarios wh easement ac will undertake

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
3 May 2017	LC1 - Village Local Council and Community Members	Serule A Village			How far should someone be from the pipeline when it is buried?	There is a 30 corridor once will need to b rights to land possible to bu and trees. Th that will be re or wayleave) discussion by Uganda and
					How is the compensation going to be made?	After the ESI detailed. In th given to the C fairly or no. If payment but to avoid going We understan options: (1) a fairly but Gov alternatives a
					The pipes will be buried, so how will you understand if it is damaged?	Aboveground and used for pipe is damag rates remotel remotely. A w impact on you No operation damage to pi
					Drilling done in Buliisa, why was it not drilled for here?	Some explora and only a fe here but the plugged and
					I know pipes will pass through peoples' homesteads. If it	Yes compens users will be and assets in undertaken to line of the pip completed, a need to be es

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					You have read about the Ogoni people from Nigeria? They are not benefitting from the oil in Nigeria. Perhaps that can happen here? Our livelihood is the lake. If there is a spill, the aquatic life will be killed, which is our lifeline.	ESIA studies environmenta and a framew consequent t
					Compensation is an issue. Say compensation takes place, the people of Buliisa may be undercompensated. If you go to Kabaale [refinery], they are being given large sums of money in compensation. Problem is we will be the first along the feeder pipeline and then our negotiating power is low.	Unfortunately district to defi improve their compensatio
3 May 2017	LC3 - Lower Local Government	Buliisa Subcounty	Male	Sec. For Environment	Now that we are expecting to clear the entire 30 m, all vegetation will be destroyed. How will you compensate?	There are thr trees, for whi grazing land, an alternative vegetation, th an area wher will need to d 30 m will be r trees, so the
			Male	Parish Chief	(a) Why do many ESIAs cater for only directly affected persons and leave out the indirectly affected persons and yet they are also impacted by the activities? (Referring to the communities who were not consulted but who claim to have felt the effects of the flaring activities during the exploration phase) (b) What is the safe zone distance? How many metres or kilometres is it safe to stay within near a pipeline? (c) Why are you considering the same pipeline trench depth given the fact that the route may have different types of soils? Some buildings have sunk in Buliisa, so perhaps the pipeline will sink.	We're sorry th scary not to k new and diffe doing a full a ensure that w It isn't a dang supply a clea speak more t There are go determine thi in soft-soil ma
			Male	Speaker	Will people not fall in the trench during construction? Can the land be used after the pipe has been buried.	The 30-m co of where it wi about this. Th rehabilitated will have tree pipeline runs.
						The technolo tech) and the will be notice

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Vice Chairperson	How will oil be transported from the different well sites in Buliisa Subcounty to the central processing facility?	There will be there will be/ the feeder pip cutting impac context of fut
			Male	Chairperson	Don't restrict yourself and construction activities to only the acquired 30-m corridor because there may be need for more land for trucks to turn, and you will need space during the rainy season when trucks get stuck. What plans are there for cattle grazers during the construction phase? How will compensation for landowners and land users differ?	We agree tha construction will minimise needed, the s negotiated. It is expected paths or route consideration during constr All affected p of Uganda, ta
			Female	Community Development Officer (CDO) - Sub-County (LC3)	What is the fate of cattle keepers in Buliisa, as land seems to be taken away from us every day, and now we have this pipeline construction? The land set aside for the industrial area is where we currently graze our cattle. Where is land going to come from to graze cattle?	I am so sorry term impact t We note that comment on
			Male	Parish Chief	What happens if, in the process of trenching, other minerals are found? What plans are there for animals and people to be able to cross the trench during construction, so that our daily movements are not stopped? How will the locals be involved in the project, so that they can own it in the future? We want to be custodians.	The project te Mineral Deve same Ministry Government will be fenced for people an able to take c commute to w You could be through this p corridor will b
			Male	Accountant	Please involve the community in terms of jobs and businesses.	The project is to think about

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
3 May 2017	LC1 - Village Local Council and Community Members	Kabolwa Village			Will the affected person be paid if he or she falls within the pipeline corridor?	Yes, all of the they use with laws of Ugan and in compli
			Male	Youth	Nickname is "Man-can-do" Will residents of Kabolwa ever get jobs now that the industrial park is located in Kasinyi in Ngwedo Subcounty? Will the entire community benefit from the compensation, or just individuals? What plans are there to mitigate against the bombing of the pipeline like what happened in Nigeria?	We are unabl skilled and ur has emphasis If there is con leadership, w the short term which to com Nigeria is a v confident that In addition, oi in the project
			Male	NGO	What effects are there if someone planted trees on top of the pipeline? What valuation methods shall be employed for the affected persons? What will be some of the management plans to mitigate against the negative environmental effects? Will the residents be compensated during the various studies you talked about?	Only shallow- buried pipelin perfectly safe Valuations wi work already. Government consideration Great questio management construction a that we need During these will need to b study (a diffe compensation
					What plans do you have for the affected persons?	We are here terms of refer when they en
					What plans are there to cater for graveyards? Will you dig deep enough to affect them?	Yes, we will b studies, we w you have gra pipe could av

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					What plans are there for the cattle grazers during the construction phase? Will foreigners or Congolese be compensated also?	During these the grazing a plans will be All people wh process.
					How long will the construction take place for? Will compensation be one off or regular?	The construc and the port i will only be sl Compensatio once, but we compensatio
			Male		What is the effect of the heated pipeline on our plants and animals? Also, will it have an effect on the rains, will it stop the rains from coming like the exploration work has?	The pipeline flask with no animals. The being in Alas
					How shall our cattle move during the construction phase?	Studies will in the cattle safe provided.
					How will nationals be differentiated from non-nationals when it comes to compensation?	People will be as according by any loss o
			Male	NGO	The Lake is shared by two nations: Uganda and the DRC. How will we identify who is Ugandan and who is Congolese to ensure that only Ugandans benefit? How will any grievances be solved? What if people are not happy?	As we have s resources wil structures to The grievanc issues resulti
3 May		Buliisa District Technical Planning	Male	Chairperson	There is a big pressure for land; all these activities need land. Local content needs to be maximised, we do not want foreigners being put in jobs that Ugandans could do. There seems to be more of a focus on Hoima with all these activities and not here at Buliisa and Kampala, seems to be very strategic. When is the pipeline going to start?	This is noted.
			Male	Buliisa Dist. Chief Admin. Officer	We understand that there will be many upcoming studies and we will not get tired. Languages should be used so that villages and subcounties understand.	This is noted.
			Male	Chairperson	The 2 m trench is very shallow. Will the pipe cover 1 m?	The coverage

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Vice Chairperson	Please explain the exact route.	The final rout completed, a G&G ESIA.
					If you use machines during the construction, Ugandans can operate them. Where and how can we get training?	The ESIA mit usage of loca
			Male	Buliisa Dist. Chief Admin. Officer	How will people be compensated?	We have an e and then an e that the instal
			Male	Buliisa Dist. Chief Admin. Officer	How will you secure the land to stop it being like Nigeria where the pipelines are attacked and set fire to?	Issues of sec have a securi community re the pipeline, t been refined.
			Male	Principal Land Officer	Most things on the corridor are good given natural resources (wood, water, grazing) that we use. The land acquired for the pipeline will need to be respectful of this. The available land is getting more and more narrow.	The ESIA stu by the comm be impacted a
			Male	Principal Land Officer	We would like the pipeline to go through the national wildlife reserve, because although there will be temporary disruption, after it is covered over there will be no disruption and it is not in a populated area. There is a shortage of available land and that would be the best solution up here.	This project w avoided as fa minimised, re
4 May 2017	LC3 - Lower Local Government	Kigorobya Town Council	Male	Town Agent	What is the distance allowed from the pipeline area to settlements?	We are trying take is unavo compensation for agriculture 10-m corridor
			Male	Agricultural Officer	My concern is the local content of this development. What opportunities will be given to the local population?	For the ESIA consulting firm skilled and un also recomme to be able to
			Male	Agricultural Officer	We see it is a long route. What mechanisms are being put in place for environment preservation?	The ESIA bio the next phas hierarchy is a
					My concern is the location. The pipeline will pass up the	As far as pos

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Agricultural Officer	We would like to understand the potential opportunities this development poses for the farmers so that they can position themselves to be able to provide food stuffs (vegetables, fruit) for the construction camps and development. There has to be some benefits from all the significant negative socio-economic impacts. If there are requirements or standards, we would like to know them.	Your comme
			Male	Councillor	Are you going to recommend measures for climate change, which these developments will contribute to?	Your comme of all the dev
			Male	Chairperson	Where the pipes cross under a bridge, will lorries damage them over time?	Engineering least impact under rivers a
			Male	Councillor	Concern that workers will come and take our women	Construction there will be
4 May 2017	LC5 - Local Government	Hoima District Technical Planning Committee/Political Leaders	Male		How do we get to access the detailed scoping plan? This will enable us to prepare the communities at the right time.	During the ES the draft impa detail district* engagement
			Male		I am concerned about biodiversity. There are many species at all levels within the realm of biodiversity, so I am concerned that the uniqueness of this environment will not be damaged. Will cultural sites be moved if they are found?	ESIA speciali biophysical a be developed site is found.
			Female		At what stage do you share your findings?	During the di
			Male		Biodiversity is very difficult to attach a value to, as we have many areas of high biodiversity.	Your comme of biodiversity
			Male		What is the involvement of local expertise?	The mitigatio building and studies. Also and unskilled them to unde
			Female		How much land will be taken and where exactly? There is going to be a big impact here from all the proposed developments. We constantly receive phone calls and	Until the stud pipeline. The ESIA in ques Kingfisher fe impacts of all sector. There

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male		Will sulphate gases be emitted?	We are desig available tech
			Male		Will there be foundations in the trench?	Yes, there wi
			Male		These developments will be a veritable change to our livelihoods of the people of Hoima forever in all socio-economic and environmental aspects. This is the first time anyone has come to talk with us.	Your commer cumulative im
			Female		We understand that the Kingfisher pipeline will also be having an 'export' pipeline. How many pipelines are there going to be? We are all confused.	Kingfisher wil EACOP expo what this ESI There will be subject to a s comment is w
4 May 2017	LC3 - Lower Local Government	Kihungya Subcounty		Speaker	What sensitive location do you mean?	A sensitive lo school or a bi
			Male	Chairperson	This land you mentioned of 10 m, is it going to remain permanently for the pipeline? If it is taken permanently for the pipeline RoW, our crops are ruined. Will you pay?	The land com ESIA has bee Government
			Male	Vice Chairperson	Is the CPF in the industry park? Will smoke be emitted in the air?	The CPF and Our studies w
			Male	Councillor	We do not want our trees destroyed by the pipeline; they are precious and we need them.	Your commer recommenda it is recomme is destroyed,
			Male	Councillor	We are concerned about security; what happened in Juba may happen here.	There are ma element. We countries. Bu framework ar and dissatisfa best practice.
			Male	Parish Chief	Employment opportunities are needed for us – we have driving skills, will this happen?	The develope contractors th by: • strengthe • creating

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
4 May 2017	LC3 - Lower Local Government	Biiso Subcounty	Male	Chief	What measures will be put in place to ensure that the environment is not contaminated during construction and after construction, and also to ensure that when oil is treated at CPF there is no contamination? What will happen to the grazing cattle, fire wood collection places, and others, when the 30 metre pipeline corridor is fenced off during construction? Won't the heated pipeline affect the environment?	We cannot an partners so w environmenta constant chec During this pr cross through be solutions p We spoke abo the environme pipeline. The
			Male	Health Worker	How will the waste generated from the construction activities be disposed of to avoid repeat of dumped waste during exploration phase by the oil companies? When Tullow was here, there were reports of faecal matter being dumped into watercourses. It was collected by a truck, but then the truck just dumped the contents moments later. What plans will be put in place to prevent workers of the pipeline from defiling girls and generally engaging in illegal sexual acts? There were reports of 60 girls being impregnated during exploration activities, by oil workers. It has been reported that this oil contains sulphur and, of course, this causes skin cancer. What plans will be put in place to prevent this?	We suspect t and camps (t would need t Thank you fo probably also camp manag There will be general awar local commun We will take aware that yo pipeline proje
			Male	Health Worker	Its alleged that heat in Buliisa will increase with the oil activities and now that the pipeline is going to be heated, what will happen to the area that is already facing challenges of global warming and general change in the rain patterns? The warming around here is too much; we don't even cover ourselves when we sleep anymore. What interventions will be put in place to cool this area? After all, it was the oil exploration that has caused heat. According to recent studies, Biiso is leading in terms of increasing HIV and AIDS infection rates at 5.8% (2016/2017). What interventions will be put in place to prevent the increasing infection rates now that more people are going to flock to the area? Feel that prostitution is caused by these oil workers There are limited drugs being sent out to the health centres by the central government (they are already reducing provision of drugs by 30%) What plans will be put in place to ensure that	That sounds world, and th it, because th exploration. I warming (like Thank you so interesting. T campaigns, a work here are We understan centres. In fa

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Parish Chief	Cultural heritage is a big aspect of this ESIA, not just environment. This project is likely to lead to displacement of some people. How will their cultural heritage be protected if they are moved?	This study wi of the area, a long before a resettlement
			Male	Agricultural Officer	Will the heated pipeline not have any effects on the soils? Why are there always no initiatives to replace the destroyed vegetation and trees? The previous activities have stripped vegetation, and never put it back. This has resulted in low productivity, and low rainfall. Why don't the companies come up with irrigation points to help farmers who are facing serious effects of climate change and change in rain patterns? Won't fish in Lake Albert be affected by the operations of the pipeline construction?	Thank you, it officer. We sp soil and the e from the pipe There will be the actual pip returned to its This is noted. long, so we a yet, but we ca The pipeline other projects
			Male	Chairperson	I am a member of the District Resettlement Planning Committee (DIRCO). We were taken to where the CPF will be constructed. People who will carry out RAPs for the pipeline MUST be trained to avoid what is happening in the RAP process for the industrial park in Buliisa where workers are being accused of bias and incompetence, where they just estimate numbers of trees and sizes of plots without measuring and counting. Or, if this is the method then sensitise the owners to the methods so that they are reassured. We have seen plants and trees being planted then uprooted, replanted and resurveyed! There should also be more community sensitisations to ensure that communities do not cheat government when time for valuing their property comes. Very worried about the drain on the health centres. The Government has cut the drug budget, so could the project perhaps help by upgrading the Health Centre III to a IV and increasing the drug budget?	Thank you fo understand th alert the RAP parties (those their roles an We agree ab people to hel We note your consideration request, so w
			Female	Councillor	When it comes to jobs, let the locals be given priority. If you are going to put up camps, it means outsiders will be employed, but if you employ locals, they already have homes.	Thank you so content, and suggested mi as possible w

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Chief	You spoke of resettling people in lower Buliisa, where people rely on farming. Will you consider economic activities when you are planning? Fishermen are very easy to resettle!	Economic dis resource in th RAP team.
			Male	Health Worker	We need an irrigation scheme here. We do not have the funding bodies to plan our own irrigation schemes, but a big priority is irrigation. Water is scarce and we are sharing a water source with our animals that was funded by World Vision, not by the government. Any of the trees that you plant will die unless you put in an irrigation scheme.	Thank you fo not water eng moment, but response. We to put in mea
4 May 2017	LC5 - Local Government	Kakumiro District Technical Planning Committee and Political Leaders	Male	Accountant	How prepared is EACOP to mitigate the likely impacts of the proposed project?	They are very themselves m
			Male	Chairperson	Why should this project be called EACOP? It is not East African; it is Ugandan. Won't other countries exploit our oil and then we will lose it as a country? Why is the project endeavouring to avoid houses and land? Is it because the Government does not want to compensate people? Do not try to avoid, rather do a long-term lease so that there can be some inheritance for our children. When it comes to employment, priority must be given to the local people. I would like local people to be the ones to dig. We do not want a situation where other people benefit when youths in our area have no jobs.	The project te Uganda is lar sold on the in Kenya or Tar which was sa Also, there is region, so this of the oil. It is internatio possible. Ofte ahead. Howe including the The project a trench will be big yellow dig
			Male	District Planner	Local leaders must be utilised to mobilise and sensitise the residents through various radio programmes. This will carry more meaning. The District Chairperson should be hosted on the radio to explain more about the project.	The project te will take that will handle pu
			Female	Human Resource Officer	Besides the sampled subcounties, which other subcounties are affected by the pipeline project?	We actually h with each and Mpasaana, a
					Is EACOP following the existing roads to construct the pipeline or will they have completely new and different routes? How will	At the momen safe and feas RoW is actua possible.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
5 May 2017	LC3 - Lower Local Government	Bugambe Subcounty	Male	Chairperson	Some time back, some people informed them that the pipeline required a 130-m corridor. Why are you saying this is 30 m?	It was clarifie running throu corridor. How clarified as w
			Male	Chief	Will people be compensated?	Yes, any tem the studies ne developed tha Government with the Gove way.
			Male	Sec. for Finance, Planning and Admin.	Is there any mitigation for climate change? People will be suspicious that the oil or the heat belowground has caused it.	The ESIA wil and insulated noted.
					The G&G survey will try and find out where the pipeline will pass. Will there be a scenario where local communities see people coming with their machines to tamper with our land without asking?	People surve separate stuc And if they do crossing your have the resu would like to without prior
			Male	Parish Chief	How many metres from the pipeline to structures?	A 30-m corric to 10 m once corridor can b
			Male	Chairperson	There is a need for more information to be given out. We do not know what is the truth. An NGO called AFIEAGO from Kampala came and talked to people just before Easter, sensitising us to the adverse effects of the pipeline. They had a map but I said if the company is not with them then it can't be the truth.	Your commer
			Male	Chairperson	Nearby there is rehabilitation of the roads and UNRA moved some settlements but they still have not been compensated. How do we know that this will not happen to us?	This is a priva Government to ensure tha fulfilled in a ti
			Female	Sec. For social services	Will there be job opportunities?	The ESIA wil use of local w support to loc

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
5 May 2017	LC3 - Lower Local Government	Buhimba Subcounty		Parish Chief	Will people be allowed to grow crops once the pipeline is buried?	Along this Ro or plant deep of permanent permanent ac allowed along Government
			Male	Chairperson	Many concerns have been raised by the communities in the subcounty who are concerned where the pipeline will pass. We have seen many people surveying and there is a lot of confusion and anxiety. Will people be compensated?	If EACOP ne compensation relocating all The exact de communities, other speciali For the prelim a few weeks
			Male	Chairperson	When will the pipeline be finished?	The process
			Male	Parish Chief	Will there be employment opportunities for local people?	The ESIA wil use of local w support to loc creating direc local procure
			Female	Environmental Health	What kinds of jobs are there likely to be?	The pipeline but this perio will be a limit The pipeline professionals The proposed involved in th locally from e local content. policy is adop above. Also linked to directly by the nationals, as and goods fo
						Pipelines are is also neces

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
5 May 2017	LC3 - Lower Local Government	Kisiita Subcounty	Male	Gombolola Internal Security Officer (GISO)	What sort of environmental impact could the heating of the pipeline cause?	There is a far has been mo findings show like a flask, s
			Female	Police	Do we need to register for job opportunities, or have any registrations?	Unskilled and skilled job ad paperwork.
			Male	Health Worker	Will the 30 m be fenced, or will the 10 m be fenced? How will you deal with roads? The fencing of the pipeline construction corridor during construction might disrupt certain services like access roads. How will this be addressed? Why did you choose Kisiita and Mpasaana? Why not other villages?	The 30 m will construction c The fence wil where neede The villages a perceptions a some other v
			Male	Teacher	How are you going to find everyone for these meetings? How will you make sure that everyone who needs to hear hears? (Asking in relation to the confusion about Kisiita A Village meeting date, which was caused by the SAS)	Stakeholder e subcounty tec as we had a g point about s pipeline footp
			Male	Gombolola Internal Security Officer (GISO)	How long will the construction phase of the project take? Will the landowners and land users be compensated for temporary land acquisition during the construction phase?	The whole co come through some testing landowners a temporarily a
			Male	Health Worker	I have a fear that people will be conning us, that they will pretend to be with your teams but that they will ask us for money to register and be part of EACOP. Is it possible for you to meet again with more local leaders and other people at subcounty level, to give them this warning?	We will contin could you als teams will ev research. If p trust them.
			Male	Gombolola Internal Security Officer (GISO)	I am worried about speculation. Where exactly will the pipeline pass? Can you show us? We want to be able to monitor and sensitise people.	We agree an through this E point. In the r
			Male	Chairperson	Can the leaders be provided with a map indicating the pipeline corridor? The sensitisation should be enhanced considering this is a project of this magnitude is new to the residents in the	As soon as th you about it, some point. We will also h

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Speaker	How long will the construction phase take to be completed within our subcounty? If you could tell us, it would provide an approximate time of how long the 30-m corridor will be leased from people. For permanent AGIs such as the pump station, will the land where they will be located be permanently acquired by EACOP? Are there plans to upgrade certain infrastructure like roads and health centres to support the construction of the pipeline?	We are not su plan together It will need to stations and There are pla not sure yet a through this s
5 May 2017	LC1 - Village Local Council and Community Members	Kisiita A Village			Won't our roads and houses be cut off if they fall within the 30-mcorridor? If yes, what are the plans?	Studies will id measures wil community a
					Why can't people be given cash instead of being resettled by the Government?	Consultations mode of com misuse cash
					What measures will be put at the refinery to avoid dangerous emissions from spreading and affecting people around and beyond? What is the safe zone like?	Plans will des refinery are p Safe zone is shall be comm
					Will there be opportunities for training locals when the project starts? Camp jobs should only be given to the locals only.	This will be fo
					How many pipeline routes are going to be there? Is it only one or many?	There will be
					Why don't you provide us with sodas and transport refund?	The policy do be forwarded
					How much will the locals be paid to avoid issues of exploitation, like what has happened before? Is there a standard rate? How have you planned to manage pipeline workers who may become dangerous to our girls and women?	This will be c forwarded to management comes.
					Why don't you consider us for allowances when we come to such meetings?	Our policy cu
						They will be c the specialist

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Councillor	You came here and spoke about the benefits. Why did you not speak about the negative effects, such as diseases, community health, air pollution, HIV and women being impregnated?	We are sorry of these aspe the impacts t and will do, ju
					I have come to attend, but I came from very far. We're happy to know, but will there be a transport allowance for us?	We are sorry you now know only.
			Male	Coordinator for Crime Preventers	The projects will come with a good amount of money and there will be some development in the area, so there will also be security concerns.	Thank you fo interest from place.
			Female	Teacher	I need clarification on the compensation issue. In other companies, compensation is done before construction begins. How will this company handle it? How will you handle employment? How will you ensure that outside people are not used?	It will be hand construction i property. Som skills needed
			Male	Councillor	Within the 30-m corridor, 10 m will be sold permanently. Could people rather rent this to the company on a long-term lease if they are not interested in selling?	That is an int discussion. W RAP, with co
			Female	Vice Chairperson	Experience shows that whenever a pipeline passes through, the area becomes a wasteland or a desert, especially with a heated pipeline. How will you stop this?	That is intere construction t has been strip ensures that coincidence t countries? Al cool on the ou
					Query about the construction process. Kibaale, by name, means "very rocky area". So, we expect blasting, which could damage people and houses.	I would agree rocky outcrop no fly rock, bu step out of th there had bee
			Female	Teacher	Will compensation happen before, during, or after construction? For example, what if my classrooms are affected or classrooms are damaged by the blasting? Are there dangers during construction? If someone is injured by construction, how will compensation happen?	It will take pla project team by fly rock, fo
			Female	Teacher	Will jobs only be for men or will women be considered?	Women will n

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					The oil could destroy swamps and that is where we get our water. We are using one borehole to supply all of the water for this village. Is there a programme to supply water to us?	Thank you sc occur ,the oil response tea wetlands will
					You've said that this is a multi-million-dollar project, so will there be employment chances? Can you cater to educate and train people, and change their lives? Can you provide us with irrigation?	It is an expen was mentione there is not a from oil rever choose how t unskilled wor
			Male	Councillor	There are persons using wetlands and they have obtained valid user permits from NEMA. In case the pipeline is routed through such a wetland, will wetland users with valid permits be compensated?	We will need legal land use compensated
6 May 2017	LC1 - Village Local Council and Community Members	Butimba Village			Some time back, officials from a ministry came and said a 130-m corridor was required. Why are you telling us something different now?	A response w response now the EACOP p be for the pro
					You have talked about the G&G coming to do work. How will residents distinguish between those people coming to do the work and those coming to take our land?	Before anyon comes to the phone calls. E landholder. G stakeholder e place.
			Male	Secretary of Parish	How long will it take to pay compensation and what is the project timeframe?	Depending on have to be co construction a programmes
				Mayor	We have many villages here. Can we have a map of those that will be affected? Rather than making people come from afar to meetings and it may not even involve them.	The ESIA stu route for the p environment.
					What happens if the pipeline is buried and someone tries to siphon off some fuel? There may be an explosion.	Crude oil is v would not tak prevent it bei stop the flow
						If the project a RAP will be

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
				Treasurer	Given that the pipeline goes through our communities, can we not be given special treatment such as clean water, good schools and clinics?	Your commer
					Some people came in and marked stones in the ground for the pipeline. Is this the pipeline route?	Clarification v that it was th refined fuel fr
					Can the community have an opportunity to see a similar development?	Your commer
					Could the community possibly see a DVD of a similar kind of pipeline?	An excellent
			Male		Can Hoima District apply for international compensation rates?	There are no will be undert
			Male	Reverend	We are so confused here. Can the community have a schedule and a coordinated approach by all the developers and disseminate a schedule of the oil development plans?	This is a good same. Your c a protracted t to put a fixed
			Female		Once the pipeline is covered, will we be able to have crops or will there be permanent land take?	There will onl able to grow above the pip
6 May 2017	LC1 - Village Local Council and Community Members	Rwamutonga Village			If the 30-m width passes through a dwelling, will it have to be destroyed?	The studies w possible avoi avoid individu appropriate r
			Male	Chairperson	I am restricted in planting things like coffee; these plants make money. I will be set back and then my house destroyed.	Appropriate a the RAP and recommende are considere
			Male	Chairperson	If the pipeline pumps oil for 20 years and it passes under our land, will we get compensation for this period?	The develope rates and it is between the
					Which villages do you expect the pipeline to pass through?	The regulator know the fina defined in the engagement.
						The develope

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					When Tullow was operating at Kaiso Tonya, they bought all their food items from Kampala and did not purchase goods locally. Can the development buy vegetables from us?	Your commer possible to u countries, loc that the local demand. For reliable flow
			Female		According to the oil regulations in this country, what is the legal distance from a settlement to a pipeline?	The RoW is 3 Community h sensitisation
8 May 2017	LC3 - Lower Local Government	Buseruka Subcounty	Male	Chairperson	Why do you talk about a 30-m RoW when we have been told it will be a 130-m RoW?	The feeder pi RoW during refined-produ m RoW.
			Male	Chairperson	How many pumping stations are on the export pipeline?	As the design
			Male	Chairperson	What is the resettlement process?	If EACOP ne compensation relocating all The exact de communities, other speciali
			Male	Chairperson	From the Government resettlement, they have witnessed that it is better to be 'resettled'; those who were given money have nothing now. Those identified vulnerable (elderly) were 'resettled' within the subcounty at Kyakbwaga. Other lessons learnt: people were not sufficiently sensitised and Government timelines were not realistic – they would say six months and then two years later. . .	Your commer
			Male	Parish Chief	Why is the grievance mechanism top down and not bottom up?	The grievanc comment is n community a now.
			Male	Parish Chief	How has the pipeline prepared to mitigate against the socio-economic impacts?	The ESIA wil economics, li recommende projects withi
						After the ESI

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Assistant Secretary	Where is the coating yard going to be?	It will be near
			Male	Assistant Secretary	The pipe is 60 cm. Will the pipe flow at maximum capacity all the time?	The flow of th the flow rate.
			Male	Assistant Secretary	How will you control the land acquisition? Will compensation be paid before or after?	If EACOP nee compensation relocating all i will include the resettlement c
			Male	Speaker	My concern is that you have sensitised us, the subcounty team, but what about the village people? Will the villages have the same opportunity for sensitisation?	Engagement started today When we retu communities EACOP comm contact for co concerns abo contact detail
			Male	Parish Chief	Will the heat from the pipeline impact crops?	The pipeline prevent heat
			Male	Parish Chief	The problem we are having is knowing where the pipeline will pass and speculation undertaken by mafias which know where it will pass. A man has bought the land where they then found the oil – he has hit the jackpot!	Extensive rou to try and, wh corridors, ele highways and route has bee far as possibl ESIA studies route will be s economic imp Unless the de phoney.
			Female	Parish Chief	We expect project employment – will that happen?	The ESIA wil use of local w support to loc creating direc local procure
			Female	Parish Chief	What mitigation are you putting in place for climate change?	The ESIA wil consequence

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Sec. for Works	Shall people be compensated equally for their lost property or will rates differ? For example, will EACOP give everyone UGX 1 million for their land? Will the compensation for land take be a single uniform figure regardless of the size of land and location along the pipeline?	The project te resettlement rates of the G practice. The determined fa
			Male	Chairperson	How will the exportation of the crude oil benefit Ugandans and people of Mpasaana in particular? The crude oil is going to pass through Tanzania to access the market but will we benefit from this oil? Won't Uganda be cheated?	The Ugandan that Uganda the developm
			Female	Sec. for Gender	Do we need permission from the EACOP team to grow shallow-rooted crops or conduct restricted activities within the 10-m corridor? There is a concern that the electrically heated pipeline will affect our crops and lead to poor food harvests. How will the pipeline be constructed through watercourses? The main water sources for the residents in Mpasaana are water streams.	The pipe will like a flask (th and cool to th there have be animals.
			Male	Parish Chief	After laying the pipeline, will a person be allowed to construct a house over it? What will be the recruitment procedure for persons with some level of skills in the subcounty? Will the office of the Chairman LCIII be involved in the recruitment process? There is a need for clarity on how the recruitment process will be undertaken as we need most of the workers for the pipeline section through our subcounty to be from our area. Will more health centres be constructed in the area to cater for the project workers but at the same time offer health services to the local residents? Currently, there are road upgrade works being undertaken in Mpasaana subcounty. How are these road works related to the proposed pipeline activities? If a person is affected by both pipeline and road upgrade works, do they get compensated for both? How will the pipeline corridor be marked?	No houses or the 10-m perm discussed. There will be Local content team will wor recruit the pe The camps w work team. T additional fac There will be project, but th There will be decided. It wi
					How exactly shall Mpasaana subcounty benefit from the pipeline project? Can the project team consider constructing new subcounty offices for us? In cases where the affected person has a small piece of land	We will note y term one, and that type.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female	Sec. for Gender	In case our rivers and streams fall within the 30-m pipeline corridor, is there a way that these can be avoided. If they cannot be avoided then what will happen? Since the Government is going to compensate for the land taken permanently, will the landowners first need to get permission to grow the allowable crops within the 10-m corridor?	The main obj resources, bu place to ensu a suitable alte The way on w discussed, bu we need to in the long term
			Male	Animal Husbandry Officer	We can only have a meaningful discussion about likely impacts after we have been given the exact locations where the pipeline corridor will be established.	It is lovely to coming. We c are interested most importa
			Female	Councillor	There are rumours that only persons with land titles will be compensated for any land take. Can we get EACOP's position on this?	We will be ab concerned, th they an owne
9 May 2017	LC3 - Lower Local Government	Kiziranfumbi Subcounty	Female	Community Development Officer	The ongoing road construction is a concern. A lot of trees have been cleared and the environmental impact is being very much felt. With this additional pipeline project, more trees will be destroyed.	Your commer Avoid: Modify and environm Minimise: If in the effect of t Restore: Afte Offset: If impe the project's r will be implen The pipeline's sensitive area are uprooted, three trees re cumulative im
			Male	Sec. For finance, planning and admin.	Assistance is required to coordinate the environmental impact on our subcounty with all these different companies coming in. There is the road development, people are clearing land for sugar cane plantations and the refinery pipeline, and now this export pipeline.	Your commer potential envi with its stake
				Sec. For finance,	After the pipeline is buried is the land holder allowed to do	In general, pe the RoW will and planting

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Chairperson	We have many plantations of non-indigenous trees (pine and eucalyptus) (planted in the 1960s under a Government scheme to counter stagnant water in swamp areas). However, they use a lot of water, which we need. We want indigenous trees planted but they cost a lot more than the non-indigenous trees.	Your comme
			Male	Chairperson	Will we have the opportunity to supply local goods?	Yes, you will capacity build procurement of service pro
			Male	Sec. for Finance, Planning and Admin.	Which is better a pipeline on top or under the ground?	The export pi environmenta visually distas
9 May 2017	LC5 - Local Government	Kyankwanzi District Technical Planning Committee and Political Leaders	Female	Natural Resources Officer	Which villages will be consulted?	Kisala West (these villages them. We are villages had t nature of the proposed loca heritage sites we will be foc focused on di
			Male		We need to understand clearly which pipeline this is?	This pipeline RoW. Not to Kabaale to K
			Male	Engineer	Who will be responsible for the pipeline corridor?	The land will construction. arrangements easement ac
			Male	Deputy CAO	How will the pipeline cross waterbodies?	The pipeline waterbody wi according to
			Male	District Planner	Ntwetwe Town Council will also need to be included in your stakeholder engagement.	Your comme incorporate it
			Male	Probation & Social Welfare	What will land access be once the pipe is belowground?	The develope land user: eit rooted crops

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female	Chief Admin. Officer	We would like to have feedback – what is your mechanism for feedback?	ESIA disclosu findings for ea separate to th you are giving your works to
			Female	Chief Admin. Officer	What are we to expect as the next steps?	Next steps: th are schedule timeline of su cautious to pr due to extern
9 May 2017	LC5 - Local Government	Mubende District Technical Planning Committee and Political Leaders	Male	Vice Chairperson	What are the environmental effects on our wetlands? How are the locals going to be involved when it comes to jobs for the pipeline project? Politicians need to be involved right from the start because they have a lot of influence on the project. They can influence positively or negatively. We propose that politicians be part of the stakeholder engagement teams to legitimise the process.	There are ob detailed studi will be profile negative impa Local employ stakeholders stakeholder t Yes, this is w This will be fo requirements in every aspe
			Male	District Environment Officer	Why are scoping reports not shared with the districts? After scoping, the ToRs are not shared with the district and, to make it worse, the final EIA reports are not shared with the district. This makes it difficult for them to make meaningful reviews and to ascertain whether their comments were incorporated or not.	This concern authorities fo This is very s and it is our h within the dis government a
			Male	Sec. for Finance, Planning and Admin.	The EACOP project MUST involve local leaders if they want to succeed because they will be supportive and will easily mobilise the communities.	Yes, local lea necessary.
			Male	Chief Administrative Officer (CAO)	We call upon the EACOP management to share timelines for particular activities so that the people can be in the know. This will avoid or minimise the huge expectations.	This is well n first go throug
			Male	District Planner	Hard copies for the project should be circulated plus emails and telephone contacts so that people are able to send through their concerns as the project progresses.	These will be provided with

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Chairperson	If we do not know where the pipe is going, how will we cope with the fear?	We note your will inform the informed.
			Male	Councillor	Will local people be employed?	The develope recommend s through traini • strengthe • creating • supportir
			Male	Councillor	We heard the pipeline scorches the land.	The 60-cm pi with hot wate recognise tha
			Male	Parish Chief	Why did you pick the villages that you are going to see tomorrow?	The criteria fo time constrain land use were locations suc the next phas communities subcounties.
			Male	Community Development Officer	The BIDS look attractive and the project sounds good. But the problem is these construction camps will bring problems like UNRA, which did not always pay compensation.	Resettlement ahead. Comp international s do so in a fai
			Male	Health Worker	Will all these people on the work camp require drugs and medical aid from the local clinic?	The construct medical facili so they will n
			Male	Councillor	If the pipeline passes some places, will there be local benefits like clinics?	The ESIA imp management avoid, minimi implementing implementatio community, I
						The pipeline but this perio 2–3 years. Du jobs (less tha

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Assistant Secretary	There have been many problems with UNRA rehabilitating roads and staff taking advantage of women, impregnating them and leaving them with children. How do we know this will not happen on this project?	We have hea Government in constructio place. If anyo recorded and
			Male	Chairperson of the Court	We fear that the environment will be polluted.	The ESIA wil Based on this put forward w developer wa
			Male	Chairperson of the Court	Most communities have developed their own bylaws that help govern their communities. Will the construction camps have a similar system of laws?	Yes The ESI pose a challe curfew timing camp in Bulii
			Male	Veterinary Officer	We need to understand if the *kibanja* or squatters on the *mailo* land will get any compensation.	Under the int compensatio
			Male	Veterinary Officer	We kindly ask that you involve the local leaders once you know the route.	Your comme
10 May 2017	LC3 - Lower Local Government	Kitenga Subcounty	Male	Vice Chairperson	Communities should be sensitised about the impacts of the pipeline being routed through their lands. The subcounty leadership supports the project, as it will lead to upgrade of roads as already evidenced in parts of Gomba and Kakumiro Districts. Will feeder roads in our area be upgraded? We have heard from certain circles that the main roads near sections of the pipeline route will be upgraded. What will the recruitment procedure be for the workers to engage in non-technical work? As political leaders, we pledge to sensitise the communities about the project and offer support to the project.	Thank you so maintain, any The recruitme approved, bu
					The subcounties and parishes through which the pipeline will be routed in Mubende District are populated sections of the district. That means many people will be affected. How will the compensation for the affected persons be conducted? The land tenure system in this area involves landowners (with land titles) and land users (tenants). Who will be compensated	Compensatio

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female	Sec. For Works	We welcome the project to the subcounty. Exporting crude will not be a welcome idea to the residents of Kitenga Subcounty, as they already have a bad experience where high-voltage electricity transmission lines were constructed through the area and yet the area is not connected to the national grid.	The Ugandan specifically fo the electricity
			Male	Councillor	What plans are in place to repair or restore roads that may be damaged during the construction of the pipeline? Will people be allowed to graze their animals over the pipeline corridor even after being compensated for the same land?	Any roads tha and repaired Yes, the plan land uses on
			Female	Parish Chief	Will the pipeline route follow the existing road network? How will persons in water-stressed areas such as Nalyankanja village be helped in case the existing water sources in such areas are damaged during the construction of the pipeline?	The pipeline often very bu road network perspective, b If any existing construction,
10 May 2017	LC3 - Lower Local Government	Madudu Subcounty	Male	Senior Assistant Secretary (SAS) ("Sub-County Chief")	In this subcounty, there are a lot of land conflicts and wrangles and therefore any penetration of the community by EACOP team MUST be communicated before entry. In this subcounty, there are many cases of gender-based violence where women and children are the majority victims. Therefore when it comes to resettlement and compensation, women and children MUST be involved. Which people are going to dig the trenches and what procedures will be put in place for local employment? Open system should be encouraged in this project.	Yes, local lea EACOP team Eco & Partne Thank you so into considera consultant kn The trenching unskilled labo leadership wh
			Male	Chairperson	The likely things that are going to be affected are coffee, houses, trees and food crops. These are the things that local people depend on for their livelihood. Won't this compensation be delayed even though this is what people depend on for their survival?	The law requ person must followed in al
			Female	Community Development Officer (CDO) - Sub-County	The biggest dependants on the environment are women and children. They depend on water sources and trees for firewood. If these are destroyed, what plans are there to replace them, even if there is going to be compensation. Much domestic violence happens when women and children cannot gather resources.	Thank you fo resources are mitigation me There will be

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female	Vice Chairperson	Now that landowners will be allowed to use the 10-m corridor, what happens in case the pipeline team wants to re-enter or access the site and crops are destroyed in the process? Will we be compensated again for crops?	Discussions a have restricte access to it fo
			Male	Sec. For Production	People keep on selling land and moving on. What happens to those who buy land after construction and they do not actually know where the pipeline passed, and so don't know where to build? What plans does the project have for this scenario?	The permane visible indicat the 10-m corr issues are sti
			Male	Parish Chief	How will the locals who are illiterate or aren't familiar with legal paperwork be helped to deal with the legal documents when it comes to land take?	The RAP tea adequate. All be present wh before, and k what their lev as a mitigatio
			Female	Vice Chairperson	Won't the electricity that is going to heat the pipeline adversely affect people?	There won't b pipe will be in know more ab
11 May 2017	LC1 - Village Local Council and Community Members	Kisala West Village			Are you the ones to decide the compensation rates?	The first step important obj any people pl be to avoid p If EACOP ne compensation relocating all The exact de communities,
					As we are having a meeting in this village, does it confirm that the pipeline will pass here?	No, the studie selection of th sample villag wetland.
					What is the recommended distance?	The RoW cre distances thu
			Male	Chairperson	Those who are going to be interrupted, how will we benefit as a community?	The ESIA imp management avoid, minimi implementing implementati

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					Having confirmed where the pipeline is, will local communities benefit from employment opportunities?	The pipeline v but this perio will be a limit short-term en labourers. The proposed construction p county, which ESIA mitigati for project-aff Also linked to pipeline proje expected that proposed pro
					We have heard about this development of the pipeline. Will that mean it will attract other developments? For example we need a mobile telephone mast.	You are quite developments
					How do we know you are who you are? Is there a representative from the district?	A response w response nov introducing ou with you. We village level. district leader have letters a and some of
11 May 2017	LC1 - Village Local Council and Community Members	Nzoo Village			If the pipeline goes through someone's plot of land that is very small, say 50 x 150 ft, have you thought about this person and how will they survive?	The first step important obj physically hav infrastructure If EACOP ne compensation relocating all The exact de communities,
					Will the communities have any benefits?	The ESIA imp management avoid, minimi implementing

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Sec. for Information	How will compensation be undertaken? Will it be temporary or permanent?	The first step important obj physically ha infrastructure If EACOP ne compensation you are a *kib* on relocating project. The e resettlement
					The Government set up a coffee development programme. Our trees have grown, but what will we do if the pipeline takes them out? They have taken years to grow.	The develope tree age and restoration pl
					If someone does not have a land title, will they receive compensation?	Everyone reg the RAP and
					Can a road pass over the pipeline?	The pipeline buried much sometimes th ditches.
					Will us local communities who have no skills be eligible for employment	The pipeline but this perio 2–3 years. The pipeline professionals
11 May 2017	LC3 - Lower Local Government	Butoloogo Subcounty	Male	Veterinary Officer	We are going to disseminate the information to the locals, but what they will ask us is whether they will be compensated for their lost property during construction.	Yes, all the a with the laws
			Male	Chairperson	If my assets are destroyed, who will determine the amount to be paid? Will I go to the company direct and negotiate directly, or have to seek redress through other means?	Discussions a during the RA the laws of U not identified the CLOs will
			Male	Agricultural Officer	In this subcounty, there are many land wrangles and disputes and any stranger in the area may be attacked. Now, when exactly will your teams do their studies so that we, the leaders, can be in a position to alert them, otherwise they may be mistaken as land grabbers	ALL EACOP community, th members will Partner.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Councillor	In this subcounty, the majority of residents do not have land titles. They are squatters or tenants with land sales agreement. When it comes to compensation, who will be paid? The landowner or land user?	This project w will discuss c
			Male	Councillor	When it comes to compensation, who will be paid? Is it the landowner or land user? Because here there are both landowners and users.	This project w will discuss c
			Male	Health Worker	Specifically about health, what are the likely hazards of this project on people's health?	This is not a other building impacts are t that we will b
			Female	Councillor	Currently, the drugs that are sent to the health centres are not sufficient. What plans does the project have to ensure that drugs are stocked in health centres that can also be used by the pipeline workers?	Thank you fo capture the c propose any
11 May 2017	LC1 - Village Local Council and Community Members	Nalyankajja Village			There are landlords and tenants here. How will the project deal with these two groups?	The project w the laws of U Each group is determined d
			Male	Security Officer	Here we grow coffee. How long will it take to replace destroyed coffee after pipeline construction?	The RAP tea plans. I under perhaps there trees growing about.
			Male	Security Officer	When it comes to employment, we don't want scenarios of Buliisa where the locals are being left out of jobs. What plans will you have to ensure that locals in Mubende get employment? We need priority when it comes to local employment.	There will be jobs that will developed an
					We have heard on the radio that government is planning to change the law on compulsory land acquisition so that they can take land forcefully. If they take the land by force, where shall we go for redress?	At the mome terms of land Office. There because the i
					We hope this project will not be like previous projects where foreigners and speculators came to our area and earned more money than the residents did during compensation, because they grabbed land. There was a lot of corruption and inequality	We agree tha have already and corruptio process, so it

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					We implore the next teams to have good working relationships with the locals and leaders for successful implementation of the project.	This is good a relationships impacts have
					If a public road falls within the 30-m corridor, what will happen to people's movements?	The project w lives are not
					Which other villages will be affected by the pipeline project apart from the villages we have heard on radios?	Studies are s the villages a
					If I had a plot of land 50 by 100 and most of it falls within the 30-m corridor and only a small portion is remaining, will I be at liberty to sell it to you as it will no longer be of any value to me?	These sorts o process. The
					Shall we be allowed to use the 10-m corridor for things like grazing?	Yes, at the m
					If the pipeline breaks, what effect will it have on people and the environment?	There will be system. The will allow any any impact o flow like othe
12 May 2017	LC3 - Lower Local Government	Lugusulu Subcounty	Male	Community Development Officer	Will landowners be compensated?	If anyone will compensated and internatio assets (inclu valuations in options will b (where appro international minimum be Therefore, th packages live community.
			Male	Community Development Officer	When will the villages be identified that will be affected by the pipeline?	As soon as th a green light the RAP will
			Male	Community Development Officer	Are there community liaison officers?	EACOP is in in the proces from each are
				Community	When discussing effects of the project, I do not remember you	

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Parish Chief	We export electricity in Uganda and the price of electricity is very high for us people. If we now export crude oil, will we be expecting the prices of fuel to rise?	Your commer impacts asso e.g., inflation refinery in the not being imp
			Male	Veterinary Officer	Will you consult more communities?	During the ne engagement depth.
12 May 2017	LC3 - Lower Local Government	Lwebitakuli Subcounty	Male	Councillor	What kind of disruption and displacement will occur?	There will be such as the c temporary lar the permaner the 10-m corr Government two options e wayleave bas community la and on this ba offered for oth entitlements Resettlement agreements, access to the agreement w
			Male	Councillor	Will local people be employed?	The pipeline v but this perio 2–3 years. Du jobs (less tha both highly sk The proposed construction p county, which The ESIA mit adopted for p Linked to this pipeline proje expected that proposed pro
						The JV partn

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Parish Chief	The value set by the district is not fair. And where permanent land take has taken place and compensation undertaken, the land user will have nothing.	Your commer will be carrie standards. C value of land area, plus an assets and b will not be co surveys of af valuation rate in agreement areas will be offered the sa land and ass structures).
			Male	Councillor	Has the three-year construction phase started?	No, it has not approved by construction
			Male	Assistant Forest Officer	You mention a lot of studies; biophysical and biodiversity and socio-economic studies. Will our people have the opportunity to be employed from this county because we have the expertise too?	Your commer consulting fir more Uganda
			Male	Assistant Forest Officer	What is the life span of the project?	Once the oil f it is possible in the surrou longer than th pipelines hav crude oil to b oil fields may the time deci phase will be
			Male	Assistant Forest Officer	With the population growing and the land divided further for inheritance, if my son inherits the land with a pipe in it what will happen?	Whoever the too.
			Male	Chairperson	The project will need to communicate to those affected by the land take in a timely manner.	The project is actions.
			Male	Chairperson	How will the subcounty benefit?	ESIA focuses identified imp CSR benefits

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
				Vice Chairperson	When will this project start? Why don't you show us the map so that we know who is affected?	The various s for the projec back to you a
					Here, the majority of people do not have land titles. We have heard rumours that only those with land titles will be paid? Is that true?	The truth is th accordance w practices.
					Not all locals have the capacity to go to court. How shall we communicate with the company if we have issues? Will there be telephone lines to reach the CLOs?	Yes, there wi publicised as as some CLC
			Female	Councillor	This area is water stressed; what plans are there to ensure that the pipeline workers do not finish the already scarce water? Will you create more water points?	There are spe availability ar not a long-ter quickly.
			Female	Business Man/Woman	Will the contractors use locals or will they come with their own workers?	There will be Ugandans firs are any jobs t
			Female	Councillor	We have narrow roads and we anticipate a lot of traffic when the project starts. What will happen to our children who are used to fewer vehicles? What plans will be there to ensure that there are no accidents in the area?	Strict speed l well controlle sensitisation
12 May 2017	LC3 - Lower Local Government	Maddu Subcounty	Male	Sec. for Production	For the pipeline project, which prices or rates will be used for compensation? Will they use the 1962 rates as they did for the road construction project? It was sad that our coffee, beans and such like were valued cheaply and we don't want a repeat of this.	We will need what will work
			Female	Sec. for Works	You have talked of a 30-m and a 10-m corridor; will both be compensated for?	Any displacer idea is that th 30 m during c
			Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	Apart from the CLOs that will be recruited during the project, are there plans to have other project structures developed, like project steering committees, as it happens for subcounty projects?	Thank you fo usually do. Th up too much your normal c
					There is proposal to come up with a law that allows government to acquire land in a compulsory manner and to pay	We are aware comes into ef

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Vice Chairperson	Was surveying of the pipeline route completed? And when will the project kick off? When will village sensitisations about the project start?	There has be done the nar still do not kn in will only ta It is hoped th a contractor v 2018. When with you to se selected one with in order
			Female	Sec. for Works	You have talked of block vales and pump stations that will be aboveground and permanent. Won't these have effects on cows and goats? Won't the water sources or dams be affected during pipeline construction?	Thank you M goats are. Th nosey cows a infrastructure The team will be avoided o
13 May 2017	LC1 - Village Local Council and Community Members	Mabale Village	Male	Councillor	Will the plants on the surface above the pipeline be scorched?	The pipeline radiating out,
			Male	Councillor	Will people be compensated even if they do not have a title?	Everyone, lar the RAPs, the information a affected by th possible impa
			Male	Councillor	We have concern that communication to us for this meeting was not good. Few people have been informed today, yet many people will be affected.	We followed subcounties v hence the rad inform. We n you for future we can make
			Male	Councillor	You talked about transparency of the process of resettlement. We hear the word 'transparency' talked about a lot but actions are then not transparent. Where will people go if they have a grievance?	The EACOP comment, thu procedures a operate. A gr up. Stakehold through a var text service a complex the encourage yo

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Resident	What happens if, at the time of compensation, you feel that your land is worth more than it has been valued?	The market v including surv land, valuatio rates) and in Government for specific ar would be offe to the land ar and structure
13 May 2017	LC1 - Village Local Council and Community Members	Kinvunikidde Village	Male	Resident	I have heard you say that the pipeline will be electrically heated. What is the effect of that heat on the people?	There is no h all the heat w inside.
				Resident	What if my house falls within the 30-m corridor, where will I sleep with my family? Will you give us another house?	If it is impossi person will be exercise.
				Resident	If my house falls within the 30-m corridor, will the project resettle me to the place of their choice or they will give me money and I look for another place?	Such big proj misuse by pr the affected p
				Resident	What happens when more of my things are destroyed by the project after they have valued and I have signed?	There will be and manage
				Resident	Who determines the rates of compensation for the lost assets? Do I determine it myself as a project-affected person or does the project decide how much I should get?	There will be and manage
			Male	Teacher	In this area, we have landlords (title holders) and tenants of *biabanja* holders. How will the project deal with these two individuals? Will only those with titles be paid and *bibanja* holders left out?	Both landown provided for i
			Male	Teacher	There are a lot of costs involved in constructing the pipeline up to Tanzania like construction costs and compensation. Why can't the Government just refine everything and then sell outside Uganda using trucks?	A lot of feasib Tanzanian ro domestic and the crude will
				Resident	What corporate social responsibility (CSR) initiatives will the project put up in this subcounty? So that the residents can forever benefit from them?	This is well n
				Resident	How will the project ensure that the workers that will come to work in the area do not disintegrate or break families for	Studies will c

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Chairperson	We have seen heavy trucks and vehicles that are going to work on the project. Won't these bring cracks to our houses because of their weight and noise?	The reason w changes that baseline will construction a
			Male	Chairperson	Why doesn't Uganda sell only refined products and not crude?	Ugandan ma Uganda. Tha of the crude e
				Resident	We have seen projects like electricity companies that tell us about certain sizes of land but they end up taking more. Are sure that the pipeline project will only take 30 m only?	Yes, in some catered for w a result of tru
				Resident	What plans does the project have if burial and cultural sites are destroyed?	Specialist tea areas and ma
					You have talked of compensation, why can't government enter into agreement with the landowner and pay rent for the lost land (10 m) on an annual basis than paying at once such that even children and grandchildren can benefit after I have died?	This is well n
					Most people here do not have radios and are busy in their gardens. Why don't you use another communication channel for your activities to mobilise the residents?	Yes, this is n communicatio chairman.
13 May 2017	LC1 - Village Local Council and Community Members	Kyetume Village	Male	Chairperson	I have 30 acres. What if a lot of that space is covered by the construction? Will I receive other land or be permanently displaced?	All 30 acres s permanent di soon as we k RAP specialis concepts with
			Male		I am a cattle keeper. You have shown us a map of the entire route through Buliisa to the Tanzanian border, but are you here because we're on the actual route, or will there be changes?	We are sure t one of the clo wide, so we w
					Where there are many people there are many bad habits. What happens if my daughter is raped?	We will take a that, but if it w case and han
					Will I receive compensation if I am affected? What will the rates be? Where will our animals graze if land is taken?	You will most who loses ac the RAP tean Government
					I am not willing to give up my property. I have many houses	Thank you fo to give up yo

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					We noticed that the only people who were compensated when the road works came through were those with titles. What will happen in this case?	The project te those without
			Male	Vice Chairperson	Need to clarify if the permanent 10 m will be acquired through a purchase or a lease. Plantations take a long time to reach maturity. What will the interim compensation be?	We are not su moment. Pec have this on The RAP will compensation raise this as a
					If the construction camp is here will I be able to do my business within the camp, or right outside it, or will there be restrictions?	The camp ma clarity. Usual understand y
					If the camp is put very close to my home, will I be able to remain in my home or will I be relocated and compensated?	The impacts impact, and t minimise any there was a v
15 May 2017	LC3 - Lower Local Government	Mijwala Subcounty	Female	Councillor	If our house is destroyed by the pipeline and we get compensation that is lower than it is worth, what do we do?	The develope activities and international of land and a compensation be reviewed to determine adjustments a eligible peopl accommodati requirements
			Female	Vice Chairperson	What will you do if pipeline passes through dams?	Our mitigation secondly if ur minimise the then we prop management example was a borehole th
			Male	Sub-Accountant	After excavating a trench and the pipe is in the ground and it is covered, how will the communities know where it is?	Generally, bu stakes to indi and the name pipeline. The

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					We have heard the presentation and the ESIA process but I am really concerned that projects of this type bring impacts because of the influx and one such impact is HIV and AIDS. What arrangements will be put in place for this?	Thank you fo potential issu how it could i camps, the w recommend c will be supplie community. C
			Female	Health Worker	What is scoping?	Scoping is sm environments determines th
15 May 2017	Traditional Leadership	Buganda Kingdom	Male	King's Representative	What is the current proposed plan on the ground down to parish level? Where is it exactly going? There is misinformation on where it will pass.	The studies a selections thu remote satelli several weeks the locations. been any mar
			Male	King's Representative	What is the time frame?	We are in the studies and in final submitta caution, as pr to give you ar the constructi operation in 2
			Male	King's Representative	Currently what does EACOP have on the ground? And what are the projected milestones?	EACOP is in the project.
					I had a question about compensation but you answered it in your explanation. What I would like to know is when will the project start?	The project is continue until Government go ahead will
			Male	Town Clerk	Will the final 10-m RoW be fenced off?	Until the pipe signs will be accidents. Th with a speed the local popu the site rehab will not be ab accident. Ten cross the buil
15 May	LC3 - Lower Local	Sembabule Town				

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Sec. for Finance, Planning and Admin.	We are grateful for the project description and the possibility that it may come here. However, we are concerned that many developments take place around here and employers say they will pay and then they do not pay. How do we know this will not happen with this project?	The EACOP venture partn They have pr scrutiny. A gr place if you h
			Male	Vice Chairperson	How will the compensation be undertaken for the 30-m RoW and the 10-m RoW? Will it be two separate compensation actions?	After the ESIA 10-m RoW, d which for an a project. The w be required fo and the activit EACOP with t
			Male	Accounts Assistant	Which subcounties does the route of the pipeline follow right now?	In Uganda, it final route wil
			Male	Engineer	We would like as much information as possible on the project.	Today we ha information o fullness of tim updates and
			Male	Veterinary Officer	What happens if you displace indigenous trees?	The mitigatio are unavoida number will h indigenous.
			Male	Veterinary Officer	How will you deal with the noise pollution?	You are quite analyse it in p place for a sh section and th proposed in c sensitive loca daylight hours trucks.
			Male	Veterinary Officer	How will you restore people's livelihoods especially if they have been saving water and other staples up to survive the year?	To meet inter livelihood res resettlement improved, wh
			Female	Secretary	Who will be in charge of the 10-m corridor?	How the 10-m between the
				Senior		

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Sec. for Growth	How will people indirectly affected by the project be treated?	We all need t from jobs are temporarily. T road upgrade to this project
			Male	Speaker	If you need more land than the 30 m, how will these cases be dealt with? We have experience from electricity projects where more land is needed and it is just taken.	The design w can be obtain extra land (fo process will b
			Female	Community Development Officer Sub-County (LC3)	Will the CLOs be recruited from the community?	The idea is to sure yet of pr specific skill s feed the infor
			Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	You will take our titles away, but how long will it take to get them back? We have had bad experiences with UNRA where people still today have not got their titles back, and UNRA has lost them so now there is no proof of title.	I understand this project is available to y behalf of the during the RA through to the
			Male	Speaker	Another problem is that the valuers cheat farmers by undervaluing their properties. Many times, there are disagreements between these people. We hope that this project will be extra careful to appoint valuers who properly relate to and are honest with residents and act professionally. You have talked of compensating both landowners and tenants whose land may be affected. However, we want to tell you that companies normally come and tell us this, but when it comes to compensation they change their minds and the tenants get nothing and end up losing their livelihoods and being treated unfairly.	The grievanc are in place f valuers will b We understar companies, a land owners.
			Male	Sec. for Growth	We hope that when it comes to job the locals will benefit. We do not want scenarios where workers are ferried from other areas and countries like has happened with the road and electricity projects here in Lwengo. We hope there will be transparency when it comes to all jobs and businesses. What about a trainee engineer who I know who needs to be mentored?	The project te so they will c availabilities.
				Senior		

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
15 May 2017	LC3 - Lower Local Government	Lwengo Town Council	Male	Town Clerk	Our worry is that the workers from the pipeline will have a lot of money and they will engage themselves in sexual relationships with girls and people's wives. Our worry is the diseases like HIV and AIDS which may be spread given the number of people that will be within Lwengo Town. This is because we have bad experience of road construction companies where young girls and women have contracted HIV and AIDS. We expect pipeline workers to have a lot of money and our girls will be attracted.	Our team of h and commun to ensure tha need to do lo only going to prospect for a developed to
			Male	Speaker	You have talked of the 30-m and 10-m corridors for land acquisition; which corridor will be compensated? Projects like this take long to kick off and yet valuations are done early. What happens if my trees at the time of valuation were young and they are mature by the time the project starts. How much will I be paid?	Compensatio landowners w plan, but first must look at are made fair
			Male	Sec. for Finance, Planning and Admin.	We expect the affected people to be compensated, but how will the town council benefit from the project?	The Town Co to more mark to Ugandan r
			Male	Councillor	The project is starting from Buliisa, perhaps all the workers may be recruited and ferried from Buliisa and Lwengo may lose out.	It would be ve from Buliisa t by employing
			Male	Assistant Town Clerk	Which exact villages will be affected in Lwengo Town? We have had bad experience with similar projects, like electricity transmission line and road projects where valuers were corrupt, arrogant and biased. They would request money from project-affected people to do any valuations. We encourage the pipeline project to be transparent and valuers to be professional to avoid community resistance of the project.	We are not su going through know sooner work with we We will try to could be a ca substandard
			Male	Speaker	The valuers of previous projects were not professional and used to miscount the affected assets, crops and trees for the project-affected people. Valuers generally cheated project-affected people; what plans will the pipeline project have to avoid a repeat of this?	We will propo methods used which valuers mistakes.
		Sembabule District	Male	Chief Administrative	What does the project need from us at district level? I have seen the presentation once before but we need to know how	ESIA team w keep you abr permission to

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
16 May 2017	LC5 - Local Government	Gomba District Technical Planning Committee and Political Leaders	Male	Production Officer	We understand the pipeline will be going through Gomba, we need to understand what is expected of us at district level short term and long term? What contribution do you want of us? What benefits will the subcounty and importantly the district get? An agreement with the Government has been made between the oil-producing districts and the benefit sharing but not with us a host district to the pipeline.	The RSK and and stakehol stakeholders communities. our activities identification. but, in the ful districts and s and the deve is noted and host districts they will be re
			Male	Production Officer	There needs to be a binding document between the district and the developer to stipulate that there will be an agreed number of workers from each district.	Your commer policy is appli contractors to
			Male	Production Officer	But what about the districts that host the pipeline? We too should be getting a revenue from the taxes that should be provided to the district to spend how we see fit. We don't want clinics and schools forced on us; we want to choose how to allocated funds as we see fit. Benefits from the oil must be shared otherwise there could be a scenario like in other resource cursed countries. We need long-term sustainable development in districts.	Your commer incorporated Mitigation is i impacts. We impacts and
			Male	Deputy CAO	What will the mandate be regarding local content of unskilled labour? There are many unskilled people in the subcounty.	The ESIA wil consideration during constr create short-t unskilled labo number of job temporary wo proposed pro further promo
			Male	Senior Assistant Secretary (SAS) (Subcounty Chief)	I have seen many well-written ESIAs and management plans but the issue we have found especially with the roads project is the auditing during construction. For example there has been no culverts constructed on a stretch of the newly constructed road so the erosion and run off in some areas runs directly in the direction of dwellings. Furthermore during construction we have seem many more adverse environmental impacts which	Thank you yo performance if there is not national audit witnessed a f was very rigo auditors focu

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
						mitigations w technical peo in your techni
			Male	Deputy CAO	A fibre optic cable was laid along the main road from Tanzania. A Tanzanian company was laying the cable and brought all its employees from Tanzania and did not employ any local people. How do we know this will not happen again?	Your commer recommend e The develope scrutiny by st
			Female	Sec. for Education and Health	Sensitisation relating to HIV and AIDS needs to be undertaken not just at district level but also at subcounty and community levels. Local leaders should be mobilised and involved to assist.	Your commer engagement mobilisers.
			Male	RDC's office	Relating to compensation, I am concerned that many people have titles and many don't. In fact, some title holders have bogus documents. Will those people without titles, yet have stayed on the land a very long time be entitled to compensation?	If anyone will compensated and internatio assets (includ valuations in options will b (where appro international minimum be
			Male	Deputy Speaker	We need to have regular meetings along the life of the project. What happens is at the beginning of the projects the district is involved but once a project is underway, we get left behind and we are forgotten.	The ESIA pro will be consul
			Male	Deputy Speaker	Please explain again the 30-m RoW and the 10-m RoW.	A 30-m RoW will be reduce build houses, The width of t required for th and the activi EACOP with
			Male	Community Development Officer (CDO) - District (LC5)	The project needs local buy from the communities and the way to do this is sustainable development surrounding the pipeline which is associated with the pipeline. If people's livelihoods are uplifted they will love the pipeline and protect it and be proud of it. Affirmative action has to take place otherwise there could be sabotage of the pipeline.	Your stateme producers as demand. The require large
			Male	Deputy	Can the construction camps be given to the communities close	Your commer

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
16 May 2017	LC3 - Lower Local Government	Nadagwe Subcounty	Male	Chairperson	As the subcounty, we buy and distribute mango seedlings and trees to our farmers for free so that we can tax them after they harvest. How will the subcounty be compensated for this loss? You can't just pay the farmers, because there are our trees for tax purposes. Will the permanent facilities like pump stations and camps be handed over to the landowners or the subcounty at the end?	Thank you fo arrange a se are better ab The idea wou be avoided th so that none The pump sta the pipeline. camps will be back to those plans to leave
			Male	Chairperson NRM	You have talked of recruiting CLOs. Will these people be volunteers like the local council chairpersons, or will they be paid? What if a CLO does not receive any grievances, will they still be paid? When will the project kick off?	The CLOs wi whether they The project s depends on t resettlement,
			Female	Vice Chairperson	If the pipeline disturbs our roads, what will happen? If the pipeline passes through someone's home, will that person be paid and resettled in the community or will they just be put on a train or lorry and be taken elsewhere? Will they be resettled outside of their original home?	This is a seri could just be through all of to resettle pe choice within
			Male	Councillor	Will there be jobs for the people of this subcounty?	Yes, there wi specifically th
			Male	Chief	Will there be royalties going to the subcounties that the pipeline passes through? Will the companies working on the pipeline be in a position to lend us their graders and other equipment to use since we have scarce equipment in this area and we have lots of projects to do. You spoke of fencing the 30-m corridor during construction. What kind of fence is it? Metallic or live/farm?	There won't b benefits will r control any m responsible w There probab because this insurance ma It will be meta through cons
			Male	Chairperson	Will there be disturbance allowance to the sub county governments like Ndagwe? In the event that another mineral is discovered during this process will the central government or the local government	A disturbance to the sub co As we have s that the pipel we go the co

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
16 May 2017	LC3 - Lower Local Government	Lwanda Subcounty	Male	Chairperson of the Water Board	How will water pipes and other service lines be replaced or compensated for if they are affected? Where exactly will the line pass through Lwanda, so that we can discuss the infrastructure that will be damaged?	During the ba you and then needs to prot any services time frame. I' presentation need to know yet, so please
			Female	Accounts Assistant	There are landlords and tenants here. Will the project deal with both of these groups when it comes to compensation?	Yes, the proje users and lan groups are re
			Female	Community Development Officer Subcounty (LC3)	There is going to be an influx of people and this will come with social problems. The children may want to be near the construction site to watch what is going on. What plans are there to mitigate all of the potential dangers?	Thank you fo identified this children from fence, and th There will be so we'll take
			Male	Gombolola Internal Security Officer (GISO)	How will the youths be engaged to participate in all of the processes, from now? Why do you have to carry out baseline studies? Who will be employed to carry them out?	All groups wil During the ba So, the basel We've been c biophysical e on it, and to r displacing pe way to develo Our team will RAP, there w We'll engage
			Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	Uganda is a decentralised country where the lower local governments are independent and can make decisions, plan, budget, and approve and make policies and bylaws. How will this independent subcounty benefit from the pipeline project, as we will be supervising it?	There will be support servi National will plans.
			Male	Agricultural Officer	Will there be a disturbance allowance for us?	For the peopl be a disturba
						So, do people

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
17 May 2017	LC3 - Lower Local Government	Kakuuto Subcounty	Female	Sec. for Finance, Planning and Admin.	We would like to know which villages the pipeline is going through?	Until all the s surveys [and finally 30 m. baseline stud
			Male	Chairperson	What do the studies actually consist of? What does 'studies' mean?	Studies are a environments identifying/co
			Female	Sec. for Finance, Planning and Admin.	At compensation stage, what things will you consider for resettlement and compensation?	Any landhold lose any land compensation standards.
			Male	Community Development Officer Subcounty (LC3)	Will you consider compensation for people with no title?	All people wil or they are *ki* prepared and
			Male	Community Development Officer Subcounty (LC3)	For your environmental assessment, which areas will you consider - will it be the entire subcounty?	Environmenta goes beyond just be within
			Female	Senior Assistant Secretary (SAS) ("Subcounty Chief")	Do we expect impacts to spill beyond the corridor?	From other si be beyond th positive impa are travelling look at cumul are going on
			Male	Chairperson	If the pipeline route goes through a water point, what will happen will you offset?	The mitigatio would advise through then
			Male	Chairperson	The pipeline route will be going through very many villages; are you going to consult these villages?	Yes, we will. identified stak However, for but we will al corridor.
			Male	Health Worker	I have concern that if the pipeline route goes through a school, a school takes up a very big area, what will happen? How	The pipeline

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
17 May 2017	LC3 - Lower Local Government	Kifamba Subcounty	Male	Rep. Councillor	Fear that when such projects come they impact on land users more than land owners because they do not have titles. How will compensation work?	If EACOP ne land users wi be prepared a land as a res the location c
			Male	Chairperson	Will compensation payment be done in the same way for titled land as for customary land?	This compens standards. Fu no depreciati with internati considered in appropriate a standards, liv restored to pr will be offerin entitlements t
			Female	Community Development Officer Subcounty (LC3)	You spoke about CLOs, will they be a single person or people and where will they come from?	The develope focus is on th the link betwe
			Male	Councillor	My understanding is that you called us together today as leaders. What do you want of us in the future? Is there a way to facilitate the future engagement with communities?	The ESIA pro district, subco engagement providing you information a studies your a and we will b
					Will compensation be paid prior to the works being carried out. Usually we have found that payment is made after the works.	Payments an
			Male	Chairperson	I don't think you can answer it but why is the Government exporting the oil can we not have a refinery?	A refinery wil constructed f will be refine farming maiz you sell any s
			Male	Chairperson	When will the project begin?	The studies a assessment s scale can be am cautious t

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
17 May 2017	LC3 - Lower Local Government	Kasaali Subcounty	Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	We propose that you permanently acquire the construction corridor to avoid situations where more land is needed, as has happened with the transmission lines. They used more land than they requested and we were further disturbed. There is mixed land use and land tenure here, such as communal, mailo, leasehold, tenants. Some of the tenants have documentation, but most do not. How will the project handle those people? For example, the Catholic Brothers have land, and the Catholic Church. When will the construction phase start? Which other sub counties in Rakai will be affected? Will the locals be given priority when it comes to jobs?	Thank you fo more land wa purposes, an both not beer to be disturbe The project te compensated The construct these approv happen first. Nabigasa, Ka
			Male	Speaker	What plans will be in place to avoid extra marital affairs, HIV and AIDS transmission, and defilement?	There will be management the project wi will need the
			Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	Will there be an effect of the heated pipeline on the soils and neighbouring people?	You will have There is one been monitor crops or anim effect on the
			Male	Speaker	In a case where a school falls within the pipeline corridor will another school be built first, or will it only be built after construction, or will it just be demolished and not built? What if the corridor goes near to a school? What will the effect be on the pupils? What will happen after construction if the pipe breaks and you need to fix it and you come onto the land and destroy crops?	The first optic but to go clos place to prote school, so as will go past q extraordinary on the best w The permane that there wo to be damage
17 May		Lwengo District Technical Planning	Female	District Planner	As a district, we are worried about compensation. Many people will flock to our offices with complaints and grievances, and who will compensate us to deal with these grievances and to sensitise the people?	Well, we assu office bearer. should receiv with them unl
						For economic

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Environmental Officer	We as a district are going to host the pipeline. Will there be royalties associated with this? We have fears of HIV and AIDS, extra marital affairs and general bad social impacts. What plans do you have in place? You have talked of workers camps, but what about facilities for their families like schools and health centres? When you finish here, will those facilities be handed over to the district for further management?	There won't b Perhaps natio There will be sensitisation contact with. communities The project is is a travelling term project i
			Female	Legal Officer (FIDA)	We have had experiences in Hoima where residents were told that their foods were not good and were rejected by oil companies, because they didn't meet the standards. What plans are there to ensure that locals can participate in the supply services?	Perhaps the discuss this. reliability of b camp manag with the right
			Male	Security Officer	There is a concern about the protection of the local people who may be disturbed by the misbehaviour of the workers, who may engage in extra marital affairs with people's wives, and rape young girls. What plans will you have in place? I propose that when the project is about to start we have an extraordinary stakeholder meeting involving the security committee and the developer, so that we can jointly discuss security procedures and collaborate on security systems for smooth implementation. Will you use private security companies or will you depend on government security? Will there be corporate social responsibility programmes for the project?	We know this other constru plans in place project will co encourage yo Thank you fo the collaborat There will ne exact mode h There will be
			Male	Environmental Officer	We suggest that all of your information be shared with stakeholders, especially about the quality requirements that you have for us to provide the camps with food and supplies, so that we can prepare people to benefit.	Perhaps the discuss this.
			Female	Legal Officer (FIDA)	In the subcounties of Lwengo and Ndagwe, there are a lot of land conflicts and disputes. How will compensation for such a project be handled? How will disputes be handled? Are there mechanisms that will handle these before compensation? I have been involved in Hoima so I know about the disputes there.	Thank you so possible land the land acqu Resettlement the disputes a
			Male	Security	You need to identify the land issues and disputes as early as	Thank you fo

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
18 May 2017	LC1 - Village Local Council and Community Members	Lukooma Village		Resident	Where will the construction camp be exactly?	Once we hav of the pipelin be finalised u
				Resident	Will we be considered for jobs if do not have skills?	Yes, you will. workers who project will be the developm a local recruit the above. Linked to this by the pipelin as it is expec for the propos
				Parish Chief	What is the reason for taking crude oil from Uganda to Tanzania?	For this proje Uganda to su market. It is r for the house
					Is it really profitable to send the crude oil in the pipeline all the way to Tanzania?	If we would h 2000 trucks e safety, enviro significantly r (from road ac can be viable and road infra because mos
					We are concerned that what happened in Nigeria – destruction of the environment – will happen here.	This is noted the ESIA, we and manager
			Male	Chairperson	100 ft or 30 m for the RoW: is that the only piece of land you will need? Will you not need reserves?	30-m RoW ye borrow pits fo
					What happens if the 30-m RoW goes through my house?	You will be co will be prepar physical and landowners a compensation first needs to land, assets (

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
						over shorter c already in pla
					You have talked about compensation and the district rate. The power line recently went through my plantation of eucalyptus trees. The actual market price for construction per pole was 3000 UGX; when it came to payment, I got about 500 UGX per pole. I had about 1000 trees cut and made terrible losses.	I am really so be undertake land or assets compensation standards. Fu depreciation f international s including in-k possible) and livelihoods of project levels company will entitlements t
					Are you going to construct roads?	No, this is a p materials and amount of ac constructing r
			Female		I hear you could resettle the vulnerable like me I am a senior citizen. Will you construct the houses for us?	The RAP will consultants n
					Can you resettle people and pay compensation?	Again we are done elsewhe well.
					Will you be communicating with the affected people where the pipeline will pass?	Yes, as soon systematicall
					There are 'lower' people down here. Are you going to get people to represent them? What is their security apart from the district leaders?	Your commen be communic the fullness o the liaison be
			Male	Community Development Officer District	My question is about compensation and the resettlement component how fair and just will it be? I have witnessed that	Thank you yo by the district Compensatio surveys to be project will be standards. Co value of land

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Community Development Officer District (LC5)	I have heard your presentation but I want to stress there are many cross cutting issues in development projects like this (e.g., gender, health, HIV). How will you mainstream these in the development?	As part of ou assessment. incorporated considered in
			Male	Community Development Officer District (LC5)	You have discussed benefits and negative aspects. I feel development brings more harm with exploitative practices such as child labour, no PPE and these projects do not cater for all categories of people like the disabled.	The develope to comply wit
			Male	Community Development Officer District (LC5)	Also along with these projects comes destruction of social behaviour and culture.	Your comme community s
			Male	Assistant District Health Officer (ADHO)	My concern is that we will export this oil and yet the price of fuel is really high. There needs to be a change in price.	I cannot spea
			Male	Assistant District Health Officer (ADHO)	We had, for many years, a refugee camp in Rakai District; it bought the district a real 'headache', it compromised the resources which were already really short, it compromised the health of host communities and the refugees themselves.	The construc canteens. An with the distri not to be a bu would recom to local comm
			Male	Assistant District Health Officer (ADHO)	There is vast amount of commercial sex here in Rakai and therefore STDs, HIV. . . We will need extra resources to cope with these problems because our budget.	The construc workers will b
			Male	Assistant District Health Officer (ADHO)	Please tell us when the construction camp goes – how many years will it be around?	The construc camps will be
			Male	Assistant District Health Officer (ADHO)	What happens to the pipes at their end of life? Will they be left to corrode in ground?	The oil well h made in Uga actual physic Albert crude for), it is muc pipeline, so e viable. Once

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Water Officer	I suggest you don't just speak to the district but you also speak with the subcounties and the communities.	The baseline
			Male	Councillor	What is the distance reserve between the pipeline and the houses?	There is a 30
			Male	Councillor	Can you tell me which roads you are exactly doing and why can't we choose which roads that you are upgrading with tarmac?	We are not fr transporting c
18 May 2017	LC3 - Lower Local Government	Kasasa Subcounty	Male	Chief	What exactly is our role as local government in this? You need us to help you make this successful but what is our role? Is there an organised compensation strategy for this project? During the data collection for the baseline, will you need support of lower local government staff or are you going to try to do it alone? We would not advise that.	We will need details of how help and coop as a guideline please feel fr We do not wa again we wou volunteer to h
			Male	Gombolola Internal Security Officer (GISO)	What sort of materials will be used to cover the pipeline? Concrete? We may have stubborn and curious people opening up the ground and damaging the pipeline. There are areas where there are no human settlements, we call this the cattle corridor. How will security of the pipeline in those areas be controlled?	The design h covering. The strong. Usual covered with The oil and g Security has government i
			Male	Parish Chief	We heard that the pipeline was going to go to Mombasa and now you are telling us it is going to go through Tanzania. Are there going to be two routes, or is Mombasa not an option, or are you going to change the route? Will you pay for the 30-m corridor during construction?	There have b but the Tanga longer an opt Yes, there wi construction c
			Male	Sec. For Works	The electricity transmission line project caused a lot of suffering for the tenants here, and for those owners without land titles. How will the pipeline handle tenants when it comes to compensation?	This project r compensated
			Male	Speaker	You don't have enough time to do all of this. Why can't the land surveying and compensation start now? That would help people to be sensitised? How will the security of the pipeline be guaranteed? For how long will the pipeline transport the crude oil? For how	The ESIA rea land surveyin appointed, sc The oil and g security of the

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female	Community Development Officer (CDO) - Sub-County (LC3)	We have seen people like your teams coming now, at the beginning of the project, and being respectful and making promises, but after the project starts they turn around and change completely. I hope that this does not happen, and that the people working on this project are not like those. If this project is to be successful, we need the involvement of local leaders and technical staff, and we should be utilised when conducting any and all community meetings. There should be budget made available for this help. When it comes to jobs, we urge the EACOP team to involve locals, especially our graduates, in jobs like data collection. The subcounty should be involved in the recruitment process.	The develope people for job We have no i you that this We agree tha you that you are already in discussed, se
			Male	Vice Chairperson	Will the heated pipeline cause health problems? Will I be compensated for any damage to crops on the 10-m corridor after the construction is finished and I am using it again?	You will have There is one been monitor crops or anim effect on the The permane the moment, that no comp access the co
			Female	Sec. for Education and Health	Wil compensation be before or after construction starts? If the pipeline breaks, who will be responsible?	Compensatio best practice, it clear to you The pipeline there is huma as a criminal
			Female	Community Development Officer Subcounty (LC3)	Will you establish a project committee with the subcounty? This is what is usually done with all projects.	Thank you fo client and pro
					I am a widow and have many children at home. Will there be job opportunities for them or will you come with your workers?	There will be
					What is the temperature of the pipeline? What will the effect be	The temperat use to bathe but not the fir

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					What if the project values my land and takes my land and they end up not paying me? Where can I go for help?	The grievanc please be rea anyone. It wo
					Will the displaced people look for their own new land and places or will the company look for places for them to go?	We would ap may need to payments an
					I was born in December 1937 and I have lived here since I was a young man. I was given the land by the owner without any document. Will the project deal with only those with land titles and leave people like us out, even though we have lived here for so many years?	The project te compensated special attent
					The people at grassroots level suffer a lot when it comes to compensation. Why can't it be that you, who have come here and met us, also deal with compensation and with grievances? It is very costly for the poor to chase up their money, and no we know you.	Thank you fo contracted in record your c deal with com
					We have heard that the pipeline route will be along the low lands, in the bottom of valleys and through the swampy areas and along the cattle corridor where there are no people. Is that the route?	That is not th telling you wh people. If you project team, monitor misin
					How will graveyards, burial sites and cultural sites be handled? Will the project resettle them and bear the costs or will nothing be done?	These will be consideration needed.
					What happens if I have rented out my land for a short period of time and the pipeline is within that land. Who do you deal with, me or the tenant? When will the project start? Will compensation be made before or after construction?	Both you and compensation the end of 20 Compensatio construction.
					What happens if the place you resettle me to is a dry place, whereas here I have a good climate and I am doing very well?	We wish you a situation eit with you we v However, if y consider the
					Am I allowed to have my own valuer during the compensation process, or will we have to depend on government valuers? We	The project w valuer you co

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					In case the pipeline passes through my land and my crops like coffee and seasonal crops get destroyed, what amount of compensation will I receive?	Any proposed the Governm they meet 'ful adjustments a eligible peopl accommodati requirements
					In case the pipeline passes through my land and I have no title, I inherited it from my parents, will I be compensated?	Everyone wo
					Are you going to focus at all on grassroots communities? Sometimes the grassroots just gets left out of the process and discussions are only left with a few. We are losing respect for leaders because of this, so let us involve communities and local people.	For scoping, we have inco and beyond,
					There are many con men around how will we combat this in respect to our land?	The develope who will be th communities. people with w studies - no c yourselves ar
				Deputy Speaker	How come the Government enlisted the district to set the rates of compensation?	As I understa has to comply
					When I look at the BID, I see there are opportunities for employment but will us unskilled people be able to get jobs? And how will we know when the jobs become available?	The pipeline but this perio 2–3 years. Th skilled profes there will be a developer ex phase of the which will fur mitigation wil project-affect Also linked to directly by the nationals sinc services and reinforce the programmes

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					What will happen if the pipeline goes through our wells? We have shallow ones and deep ones?	Our mitigatio and if we can take out one of the same t
					How much can the pipeline bend to avoid?	Not much be
					May I suggest you use a megaphone to better mobilise people. Also we listen to CBS radio station or Mbabule and Buddu radio stations not the one that this meeting was advertised on.	Your comme
					May I also say as long as there are good relations with the communities and individuals then this will work.	Your comme the stakehold
					We have seen projects displace people and then compensation not paid. How do we know this will not happen?	This is a priva
19 May 2017	LC3 - Lower Local Government	Nabigasa Subcounty	Male	Senior Assistant Secretary (SAS) ("Subcounty Chief")	Will people be allowed to grow crops or do anything on the 20 m that will be returned to the landowner or user after construction? You said the affected people will be paid in accordance with the laws of Uganda. However, the problem is that the ordinary people do not understand these laws and therefore they cannot claim their rights. Why don't you sensitise them about the laws so that when it comes to dealing with them, they are informed and can be able to agree or not agree when it comes to compensation I recommend that there should be brochures talking about how the landowners and users will be compensated so that our people understand.	The land that That is a very assist with th
			Male	Speaker	When will the temporary acquired land be handed over to the owner or user? (After how long?) There are some tenants here who do not have documents or agreements, how will they be handled? Is it possible for someone without a tenancy agreement go to court to get an affidavit to support ownership so that he can present it as evidence in order to access compensation?	Yes, the land landowner, a testing of the have those o All owners ar appropriate c Please take a proves your s the RAP, and obviously, do
				Senior	We appreciate some of the benefits that may come along with	Construction

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
19 May 2017	National Government	Uganda Electricity Transmission Company Limited (UETCL)			Why did they not leave it as a 1-km corridor to cater for transmission lines and any other wayleaves, such as railways and roads? Additionally, the extra width would be important for the security of the pipeline.	The pipeline level of detail maintain a 1- usually provic during detaile
					There has been talk of a shared corridor, which would reduce the need to buy more land. If you need to heat the pipeline, you will need electricity. Everything should be in one plan, otherwise you will end up displacing people.	We shall mak
					What kind of maintenance is allowed along the pipeline?	Maintenance length of the maintenance
					How long is the anticipated construction period?	Based on the be complete
					We shall need coordinates of the project area in order to know whether it will affect our powerlines. Yes, we shall be interested in knowing the pipeline's alignment.	The route has a map showi
					Do you have any details regarding the location of current and future planned powerlines and stations?	Yes, all of thi
19 May 2017	National Government	Uganda National Oil Company (UNOC)			What will be energy source for heating the pipeline for a period of 25 years? The gas from the oil fields does not seem sustainable for such a period.	Crude oil and process.
					UNOC is strategically storing reserves of oil at present before the elections in Kenya, as it sees this as a potential risk.	This is noted.
					A number of questions about the camps and pipe storage yards, including: • How is the waste going to be managed? • How will the waste be categorised?	EACOP is cu there will be management
					Have previous Total and Tullow studies been used as a benchmark or incorporated into the ESIA process? The data collected can reduce the time frame of this ESIA.	Previous stud additional dat previous work
					Some of the studies focus on one direction; for instance, some reports focus on the impact of noise on people and do not cascade it to animals or even the actual structures that are being developed	The purpose and social im of project acti

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					How does the ESIA cater for what communities will get out of the project, and what can the project contribute as a shared value with the communities? How will communities be left in a situation where they will, for example, have improved access to healthcare facilities?	A grievance m plan to help a
					UNOC operates throughout the oil industry process, up- and downstream.	This is noted.
					UNOC has a stake in the industrial park attached to the refinery. Regarding the refinery, there is currently a due diligence exercise being undertaken and a decision on whether or not it will go ahead is likely to be made soon.	This is noted.
					Ultimately, UNOC would like to acquire blocks itself and operate independently of IOCs. It is currently looking for partners to work with upstream and launch an exploration company.	This is noted.
					Regarding EACOP, UNOC is currently negotiating an agreement with IOCs and, once agreed, will be more visible.	This is noted.
					Some communities might not understand the media presented. Will there be popularised versions of presentation materials? There is a concern about peoples' expectations of the project. If they are not informed, it could impact the project and possibly lead to hostility from communities during project implementation. The developer should try as much as possible to inform communities continuously.	This is noted.
					If there are resources from which communities could derive value, that would be a key area of concern, e.g., forest reserves and rivers. A lot of information on the project area should be gathered, in addition to continuous monitoring and communication with communities.	This is noted.
					The study should look at other large-scale projects that are tagged to the EACOP project, such as the refinery, industrial park and any other upcoming projects. You may talk about the utility corridor from Hoima although not in detail. The utility corridor is to be integrated with the refinery, storage facilities and the industrial park.	This is noted.
					Given the gap in critical services required by the industry, it is likely that other people [service providers] might come into	This is noted.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Female		Impacts or effects? An impact can be both positive and negative. If it is defined at the beginning then it is clear. It is better to use the term impacts: we do not want to confuse people and this is the terminology we are used to.	Noted
			Female	Environmental Inspector	Does this ESIA capture all the aboveground installations including the construction camps?	A response w response nov installations i
			Male	PEI	For the associated infrastructure (upstream pipeline projects), we have asked Total to work with CNOOC. The feeder pipelines both run through very sensitive areas. The approach to the feeder pipeline ESIAs (Buliisa and Kingfisher) should be consistent. NEMA would prefer for the feeder pipeline to be a separate report or as separate volumes with a detailed assessment as an appendix. The approach needs to be made clear at scoping stage.	Total is worki CNOOC abou
			Female		The two feeders should have alignment in the mitigation and then this can be aligned with the export pipeline to find synergies and synchronise. I think the feeder needs to be handled differently and therefore two ESIAs.	This is noted.
			Male	PEI	We are not going to consider whether it is two ESIAs now.	Noted
			Male	In-County PM	Have borrow pits in the area been identified? Or have the contractors got their own source?	The ESIA wil develop a fra
			Female	Environmental Inspector	How the project addresses compensation needs to come out clearly. What will the RoW ownership be? The RAP needs to be integrated into the ESIA. The RAP itself is a decision process before NEMA approval the issues of ownership of land has to be clearly addressed.	Another contr
			Female	Environmental Inspector	We need to know the composition of the team. The national team and local expertise must be taken care of.	Comment not
			Male	PEI	We have national laws. While we appreciate RSK's skills, the consultant must justify that they cannot find skills locally. Total has not demonstrated building capacity sufficiently to date. It is very difficult to see what Ugandan inputs are. The ESIA needs to clearly demonstrate Ugandans' input in the process. Any expat has to be certified to work in Uganda. You need to apply to NEMA demonstrating your skills and expertise. You are breaking the law, you need approval of NEMA; technical issues	Comment not staff who are and requisite consideration

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	PEI	The TOC – how will the volumes be undertaken? Geographically? You must let us know what to expect.	Noted
			Female		What is the EPF? This is the first time I have heard this terminology. We need to bring everyone on board with the terminology.	It is the Expo
			Female		You talked about three ESIAs. This overall report for both countries, where will it be submitted?	It will be subr
			Male	PEI	With regards to this overall report, the entities in Uganda will need to reviewed before it is submitted as we will need to be satisfied with the content and be comfortable with it prior to it being submitted.	Noted
			Female	Environmental Inspector	What is being undertaken in Tanzania?	Exactly the s Tanzania.
22 May 2017	National Government	Petroleum Authority of Uganda (PAU)	Female	Government Officer	During community engagements, it would be important to highlight the positive social impacts related to the project as well as negative, because this will guard against the perception that such projects are only associated with negative social impacts. That is part of our communication strategy at this authority.	It was explair impacts and provided.
			Female	Government Officer	What is the anticipated timeline for the project? The project schedule should be submitted to this authority. A timeline would be required by 24 May.	This is noted.
			Female	Government Officer	The Buliisa [Tilenga] feeder pipeline is an upstream project and the export pipeline is a midstream project. These components should have two different ESIA reports submitted to NEMA, as these activities are now governed by different regulatory regimes. There is also a concern that combining the project may cause confusion with local communities. As such we expect two different reports: one for the feeder line and the other for the export line. However, studies can be conducted concurrently to take advantage of the synergies.	This is noted.
			Female	Government Officer	The Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act, 2013 should be included and reviewed in the ESIA legal framework, as it is the enabling legislation for all midstream activities.	This is noted.
			Female	Government	Proposed team's CVs should be attached to the scoping report,	This is noted

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			Female	Government Officer	Government is in the process of finalising the new EIA regulations. We would appreciate if a Gantt chart of the EIA activities could be provided, so that regulators remain up to date on the EIA, and how this fits in with the upcoming legislation. PAU is not sure of the timeline for production of the new regulations, but understand that there will be some significant changes to existing regulations.	This is noted.
			Female	Government Officer	PAU would like to see more formal stakeholder engagement in the ESIA process, in addition to scoping and draft ESIA stage.	This is noted.
			Male	HSE Officer	A list of stakeholders to be consulted should be included in addition to the principal agency, NEMA.	This is noted
23 May 2017	National Government	Ministry of Gender, Labour and Social Development	Male	Labour Commissioner	This ministry will be reviewing all ESIAs from now forwards and will be reviewing all matters related to social. NEMA has accepted that it will review environmental issues and we will review social issues. The World Bank takes social impact assessment seriously and the issues of social safe guards need to be standalone. The mandate for environmental assessment is very different from social assessment. Social issues need to be brought to the fore; very little is known about social impact assessment and issues relating to social and those relating to environmental should be packaged separately. We are working to separate social impact assessments from environmental impact assessments. This may happen in the next year. World Bank stopped funding for the Fort Portal Road due to noncompliance relating to issues of worker rights, community involvement, community health and safety, and gender-based violence. World Bank has rolled out a checklist for social safeguards. In the first presentation, it states there are “no major social & environmental constraints”. In our view based on what is happening on the ground, we insist that this is not true. There are major social constraints. In addition, the project is traversing a wide area across various cultures which need to be taken in to consideration. There is the issue of rights of the most vulnerable groups; I hope the ESIA will provide strategies for the identified vulnerable groups. Furthermore, transboundary issues: how will they be addressed? Will international standards be applied or will the project rely on agreements from the two countries on issues surrounding labour etc. Want to ensure standards in Tanzania and Uganda are the same if possible. Humanity in its entirety [children	Your commer regulation an 'environmenta as natural res issues. But th This is scopin this will deter studies. Once and appropria Trans bounda studies revea with disabiliti phase. Stake dedicated sta

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					that need to be considered are trade unions. How easily will it be for communities to participate and contribute to the ESIA process? Wants to ensure the project "empowers communities to make a difference" It is important the communities be given representation.	
			Female		Gender mainstreaming is of prime concern - what will the gender strategy be? Gender-based violence is a concern in projects like these also what mechanisms will be put in place for HIV and AIDS and the vulnerability of communities affected by the project? Whilst it is understood that the impact assessment may propose gender equity strategy what surety do we have that this will actually be implemented? Gender concerns must be addressed holistically. Project should take affirmative action and ensure women are just as employable as men and are part of the process. This project will interface with natural resources - environmental capital and people derive a living from these capital resources, there will be a destruction of livelihoods across men, women and youth - a mitigation strategy will need to be applied. If people lose their productive capital, e.g., land, they cannot solely rely on compensation. They will require entrepreneurial training; if not, they will end up destitute. Have you considered issues of child labour?	We are curre undertaken o address strat based violenc phase. We w livelihood res
			Male	Labour Officer	Please can I draw your attention to PS 2 of the IFC Performance Standards?	Your comme
			Male		Have you considered emergency preparedness and community safety? Specifically, has the project considered how they will address hot tapping?	This aspect w management
			Male		For the VECs, have you involved the communities?	Yes, the VEC communities.
			Female		I refer to slide 14 and I would like to say that sometimes environmental issues are not economic but you have to understand the impact beyond monetary terms. Further community participation in the project is really important. Also with regards to vulnerable groups such as youth, women, persons with disabilities what considerations will be put in place? Perhaps providing them with affirmative action.	Your comme Mitigation me in place for c
					The role of this ministry needs to be appreciated and this Ministry's obligations under our mandate are clearly defined. I	

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23 May 2017	National Government	Department of Museums and Monuments	Female	Cultural Specialist	National sites in the project area?	Yes there are as well, Ntusi Sembabule, S Buliisa (Biiso trees/hills – ir
			Female	Archaeologist	What should be done in such a scenario?	Avoidance m avoid these s
			Female	Archaeologist	What kind of intangible cultural heritage?	Tangible and sacred hill- w
			Female	Archaeologist	Sites that may be located in the project area • Kaiso–Tonya should be considered since it's a fossil site. Paleontological studies conducted at Kaiso Tonya as a consequence of the oil activities revealed the presence of the oil in the region so important to preserve these sites. • Before approaching Kibiro, there is a spiritual site and there is a contact person. The contact number will be provided by Mrs Besigye N. Jackline, a senior archaeologist of the department. Detailed survey before approaching Kibiro is recommended. • There is also a hot spring just below the Kibiro Cultural Village and Kibirro salt village important to conserve. • Other sites such as Baker's view should be considered. Important to Identify other sites that may not be known by the department during scoping	This is noted.
			Female	Archaeologist	How are cultural heritage sites categorised?	• Archaeo • Palaeon • History • Traditio
						The departme activities in re procedure at their EIA repo through chan Little archaeo cultural herita

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					Have you considered all other heritage as important?	Depending o everything de Some sites h regional or in heritage is ur
24 May 2017	National Government	Ministry of Lands, Housing and Urban Development (MLHUD)	Female	Sociologist	It looks like you will do a thorough job in terms of social. There are so many activities ongoing in Buliisa and Hoima. Have you found out what other activities are ongoing in these two districts? How will you deal with communities and stakeholder fatigue and confusion between all the different projects? How will you work with the communities in terms of human rights?	A SEP has b register. Meth CIA will also other large o influence and could see tha between the stakeholder e communicate how they pre rights study c
			Male	Governor	Thank you for the presentation. We have been involved from the beginning because of the land acquisition. There are many projects going on related to infrastructure, roads, pipelines including the white product pipeline (refined oil pipeline), feeder pipelines and the export pipelines. The affected people need to be handled careful to reduce their stress levels. We as a department are committed to assist you. We appreciate that this is scoping stage and you largely will not have answers yet nevertheless let's ask the team questions.	Your comme
			Female	Geographer	It is understood that the pipeline route will intersect with rivers that feed in to major rivers or major rivers themselves. The construction of the pipeline will interrupt the flows of these rivers which may cause floods further downstream that could impact on settlements. Have you made any arrangements for resettling people during the construction period?	Your comme will share this exception of studies will a like this so th
			Male	Principal Urban Development Officer	My concern is the construction camps; there are four in total? How permanent or how temporary are they? I recommend that the site plans be shared and approved by the local authorities to assess whether synergies can be made.	Camps will b sufficient and abstraction a a canteen an have a code monitored. A camp is being facilities will b

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			Female	Physical Planner	Will construction camps be located away from the major settlements? Will the camps be the company or government projects? How will water be provisioned for?	Construction planned to be siting options communities
			Female	Physical Planner	Anxieties will come from where the pipeline will cross settlements - need proper packaging of information dissemination and the right understanding of leaders to be able to communicate to populations.	Your commer appropriate la project BIDS. engagement how they wan
			Female	Physical Planner	The potential PAPS need to be focused on with screening for vulnerabilities, if cash is paid some will not know how to invest and they spend it all so there is real social devastation. I want you to favour land for land options.	The ESIA pro the consultati us know your within the con
			Male	Governor	A lot of communities have been devastated by natural forces. Rivers have washed whole communities and anything along the way with it. Changes in the rivers would potentially affect communities.	Your commer
			Male	Governor	South West Uganda (including Rakai) faces earthquakes will surveys detect these sensitivities and would the pipeline be affected by such natural forces?	On the groun studies such
			Male	Governor	If it is not buried deeply, are we sure vegetation will survive after the laying of the pipeline? Won't trees roots penetrate the pipeline. What will be done to restore the vegetation?	Deep-rooted restored as n exceptions, e
			Female	Sociologist	I am concerned about the baboons, monkeys and the chimpanzees. When you go up that way, you see them. They have nothing to eat and they are being forced out of their natural habitat because it is being tampered with. Will this increase? Do we have a plan? Some are harmful to human beings, what will happen to them?	A biodiversity ESIA which w
			Male	Environmental Scientist	If the feeder and export lines ESIA report is submitted to the authorities as one report, will all issues be addressed?	A response w response now
			Male	Environmental Scientist	There is a need to elaborate what will be done at the coating plants. What activities will be undertaken and what are the likely impacts?	A response w response now included in th
					How will the wastewater that will be used during the	A response w response now

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Environmental Scientist	The ESIA report should include an analysis of alternatives that were considered before the final route was zeroed on.	This is noted.
			Male	Environmental Scientist	The engineering designs should take into considerations that the rift valley is tectonically active and this may impact on the proposed pipeline.	The engineer and there are
			Male	Environmental Scientist	For purposes of cumulative impact assessment, UNRA can share with the EACOP team a list of roads, “critical oil roads”, that are being upgraded in the sections which may be part of the pipeline route corridor. This can be provided in the form of shapefile, although these have to be formally requested by Total. It should also be possible to provide a shapefile that shows all future proposed roads and existing roads. In some cases, it will also be possible to include certain information about existing roads such as condition, build type and traffic count data.	This is noted.
			Male	Environmental Scientist	Will this assessment also incorporate issues related to the development of the proposed utility corridor? The proposed utility corridor will have electricity transmission lines, roads, railway lines and will have a corridor width of 106 m.	A response w response nov addressed to the utility cor
			Male	Environmental Scientist	What measures will be put in place at major road crossings especially in relation to testing the integrity of the proposed pipeline? How long will the roads be blocked during pretesting?	A response w response nov hydrotesting, crossings and they will be sp locations of th
			Male	Environmental Scientist	If road diversions are to be considered during the construction of the pipeline, then these have to be carefully selected given the axle load of some of the heavy trucks.	This is noted.
			Male	Environmental Scientist	Considering the logistics (500,000 tons of material) to be transported, how will these be transported? The weight of these materials will cause impacts on the roads and there are concerns related to increased traffic volumes.	These issues
			Male	Environmental Scientist	Pipeline maintenance works may cause conflicts with the local communities. Who pays for crops that will be damaged along the 10-m corridor during the execution of maintenance works?	Maintenance undertaken u travels inside
			Male	Environmental Scientist	There is a new standard gauge railway line being constructed between Hoima and Rwanda	This is noted.

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			Male	Environmental Scientist	UNRA is currently constructing only one road that has to implement IFC standards, the requirements for the majority of roads do not necessitate the same levels of stakeholder engagement.	During recent with many pe
			Female	Environmental Scientist	How many roads are going to be crossed by the pipeline?	A response w response nov
			Female	Environmental Scientist	Along the 10-m corridor, how will the developer ensure that only shallow-rooted crops are grown? There are land transactions and the new land owner may not be aware of this requirement.	A response w response nov land use requ campaigns w take place du
			Female	Sociologist	What plans are in place to relocate socio-cultural sites that the project construction activities may encounter? These should be relocated in accordance with Performance Standard 8 of the IFC.	This is noted.
			Female	Sociologist	How will the restoration of vegetation cover that will be destroyed during the construction phase be conducted? Will the contractors work with local communities during restoration?	A response w response nov management of plants for r
			Female	Sociologist	The project poses social risks to communities especially with regard to transmission of sexually transmitted diseases such as HIV and AIDS, child abuse as there will be a migrant labour force. What plans will be put in place to mitigate against such risks?	A response w response nov of health spe the pipeline c recommenda highlighted in Plan will inclu management
			Male	Environmental Scientist	What is considered as a safe distance corridor from the buried pipeline? Or can we assume that the pipeline will not have any incidents that may affect people close to it?	A response w response nov with safety of conduct every
			Male	Environmental Scientist	How does the pipeline design incorporate social issues, especially in regard to the physical location of the communities?	When design houses are ta an impact as
			Male	Environmental Scientist	How will the major national roads be crossed by the proposed pipeline route?	Crossings are

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29 May 2017	National Government	Directorate of Water Resources Management (DWRM)	Male	Assistant Commissioner	There is a need for the proposed open cut method across seasonal and smaller water streams to be elaborated. What is entailed in the proposed method?	This is noted.
					What will be the source of energy for the heated pipeline?	A response w response nov Potentially cr generation to
					The team should identify the water systems that are likely to be affected for effective guidance from the Directorate.	This is noted.
					There is a need to involve the Directorate throughout the process for purposes of providing the EACOP team with the current and anticipated water use along the proposed pipeline route. When permits are being issued, all these have to be taken into consideration.	This is noted.
					During literature review, the Environmental Sensitivity Atlas for the Albertine Graben, 2010 should be considered.	This is noted.
			Male		There is a need for the project team to inform the Directorate which streams and rivers will be crossed by the pipeline and on which of these, the open cut method will be used. This has implications on the downstream and upstream users of these surface watercourses.	Details of the of the geophy will depend o Directorate a
					How will the security of the pipeline be provided?	A response w response nov pipeline. Fibr
					Are there mechanisms in place to compensate the local communities that will be affected?	A response w response nov be applied to
					How will impacts on existing infrastructure (like boreholes, dams, schools) be addressed?	A response w response nov refining the ro carried out to be avoided, c
			Male	Water Officer	There is a need for clarification on block valve stations. How many will be erected? Will there be a block valve station at every watercourse crossing along the pipeline?	A response w response nov of block valve
					Permits associated with water use at facilities like camps	

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			Male	S.W.A	The Directorate expects comprehensive baseline studies for surface water resources that will be crossed by the proposed pipeline. The baseline will be used for monitoring purposes.	This is noted.
29 May 2017	National Government	National Forest Authority (NFA)			We need to see the lower part of the pipeline that is close to the lake. It seems to cover other forests such as Malamagambo, Kaiso and Kigona (Sango Bay ecosystem).	This is noted.
					What about lakes, rivers and rocky areas? Have they been considered?	A response w response nov are currently pipeline route the impacts. present a cor
					Will there be a road running alongside the pipeline?	A response w response nov as far as feas during the co the pipeline.
					How will the proponent access the pipeline to undertake maintenance and repair?	A response w response nov as much as p operations wi
					You mention two major rivers, both of which are located in Tanzania. However, in Uganda there is also Katonga River. How will the pipeline cross such areas?	The prelimina time being th directional dr will identify o
					Can we get a KML or shapefile of the pipeline route?	A response w response nov are still ongoi that informati and issues of
					There could be other forest reserves that have not been captured by the study, and providing the route information would help to identify them.	At the mome studies contin
					Will the pipeline pass through the escarpment? If so, then it is likely Budongo Forest will be impacted.	A response w response nov forest. We ar wildlife reserv

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					What plans are there to mitigate the separation of habitats resulting from transport routes created during the construction phase?	A response w response nov part of the ES
			Male		Does the ESIA relate to any studies on the viability of the pipeline, and will this ESIA try to look into the project's viability? We would like to know if there it is possible that the pipeline could be used for something else. We also expect that the scoping report or ESIA report will highlight something on the decommissioning process. The SEA (strategic environmental assessment) is a source of baseline information. Is this study getting some information from it? You might find a salt component in some of the areas where the pipeline traverses water bodies. Has the effect of such areas on the pipeline been considered? You mention the African wild dog and propose to study a large area. What is the use of information from these areas that are outside the 30-m construction corridor?	A response w response nov environmenta consider the planned to ca Decommissio The SEA is b The pipeline conditions en There is the p project baseli across the pc
					The study should look into the potential impact of contractors' activities on forests, such as mining of sand.	The ESIA wil an action pla
					We have not heard anything about seismic activity.	Geophysical related to sei
					How far will the heated oil flow in the event of a leak? When you mention that the pipeline is buried at a depth of 2 m, is that 2 m to the top of the pipeline or to the bottom of the trench?	Studies are s were to occu
					The ecosystem study should consider insurance and the transboundary nature of the ecosystems. How will insurance take care of these?	A response w response nov The transbou ESIA.
			Male		Is Uganda also responsible for the Tanzanian section, and are there synergies that can benefit other countries?	A response w response nov common app each country ensure consi internationall

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					route that crosses forest reserve? The proponent might need to get acquainted with the updated Uganda forests map. There are also cases where people are issued licences to plant trees.	
					Will the construction activities avoid large trees?	A response w response nov with a priority feasible with will be undert possible.
29 May 2017	National Government	Uganda Wildlife Authority (UWA)			Will there be only one pumping station in Uganda? We are also interested in the location of these facilities.	Engineers ar in the ESIA.
					What type of footprint are we talking about for the aboveground installations? We need to understand the level of impact and significance of such facilities.	These are no finalised. It w
					You talked of a depth of 2 m for burial of the pipeline. It is likely that the pipeline itself will displace a lot of soil once it has been buried. What will the proponent do with the excess soil that remains?	This is one o and ESIA tea
					Can you explain the open-cut crossing that is proposed along the swamp sections?	If the swamp season. For p on either side the natural dr construction construction t
					What about main roads, will you destroy any roads during construction?	The project w
					How do you propose to undertake hydrotesting? How will you manage the water and where will it be released?	This is not ye hydrotesting.
					Which facilities will test whether there are leaks during the operation phase?	Leaks will be
					What volumes of oil can be detected in the event of a leak? It is possible that a minor leak releasing a small amount of oil could go undetected and cumulatively result in a large amount of oil released. There is an example of a pipeline in Nigeria where a leak was discovered long after it had occurred.	The project w potential leak

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						corridor, exca backfill of the number of fac
					We need to see the pipeline route in relation to Bugungu wildlife reserve. If it is outside the reserve, how far is it? An improved map should show the protected areas located near the pipeline. Among the sensitive areas, we have protected areas as well as areas of dispersal, such as that of Lake Mburo national park which stretches all the way to Rakai. We have an ecological unit responsible for developing distribution maps.	This is noted.
					What do you have in mind when you talk about avoidance features?	These include cultural and a structures.
					Why does the pipeline take crude to Kabaale if that area has been reserve for the refinery?	This was a de whatever is n
					How do you define sensitive habitats? During one Ugandan hydropower project, the environmental impact study failed to determine that a certain species of plant was endemic to the project area and resulted in a controversy in which the project was almost cancelled. For this reason, the study needs to adequately determine endemism. While there is substantial literature on the Albertine area, it is unlikely you will find as much information outside it. Regarding the Rapid Botanical Survey, I did not see any local experts. I know some local experts who are working extensively in this kind of work. What happens after evaluation of the ecosystem services? Will there be mitigations for the foregone ecosystem services? We hope our comments will enrich the second stage so that these issues are taken into account. The pipeline will fragment existing wildlife corridors, but it is just as likely undeclared corridors will be affected. The study needs to identify these corridors and investigate how they will be affected. This project could attract a public hearing although NEMA is mandated to decide. Will you have one public hearing or	This is noted. along the pip

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					Have you started any baseline studies?	A response w now is as foll
			Male		In your presentation on the cumulative impact assessment, you spoke of existing projects. Have you contacted the Directorate of Geological Survey and Mines and hydropower (Ministry of Energy and Mineral Development)? They might have some plans for projects within the protected areas which could have a bearing on the cumulative impact assessment.	A response w now is as foll are being cor define the cu
					It is difficult to have data on the entire project area, as our rangers are not scattered across the landscape. We have information on areas where UWA has been called to undertake rescues (such as sites of crocodile attacks and problem animals). The staff at Lake Mburo National Park should be able to provide information on the Minziro-Sango Bay area. Lake Mburo is a nucleus within the same ecosystem as those areas.	This is noted.
					We mentioned Sango Bay, wetland species, several swamps, the Mayanja River system, Katonga River system, and the Lubigi River system as well as the extensive wetland papyrus swamps that surround them. They should also include the Shoebill Storks that breed in wetlands and all species threatened by the conversion of wetlands.	This is noted.
1 June 2017	NGO	Civil Society Coalition on Oil in Uganda (CSCO)	Male		As CSCO, we have expectations from the developer and the consultant. We want to know what the project is about, what studies are going to be conducted, how do you intend to engage partners, tools of engagement so that the partners can influence the way things are being done for the benefit of society.	This is noted.
			Male		How is the EACOP team envisioning CSCO and community participation in the project? Can we monitor activities being undertaken?	A response w response nov will continue nature of stak developed.
			Male		Beyond this meeting, what should we expect assuming NEMA does not give us a copy of the scoping report? What is the level of detail required in order for CSCO to engage the team effectively?	Engagement National Envi
			Male		The study should consult the Albertine Graben Physical	This is noted.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					will leave their families and this will likely result in a number of social impacts, such as prostitution. The study needs to look into that.	to the project
					What happens after the 25-year life span of the project? Will the pipeline be decommissioned and if yes, who does the decommissioning?	There shall b facilities after
			Male		Will the 10-m corridor right of way include roads that the pipeline maintenance teams can use?	A response w response now developed du
			Male		There is a total disregard to the human influx in the social issues; there should be a plan to address that.	Human influx study.
			Male		There is no mention of coordination with government agencies. There are cases in which district local governments do not know about the projects that are being carried out in their areas. The Government has a framework for handling resettlement and compensation and some aspects of a grievance management system. The project should make use of these rather than introduce something new.	This is noted.
			Male		The information provided does not show the environmental and ecological aspects, and does not show high sensitivity areas. It is in the best interest of any consultant to give all information that will be relevant.	Ecologically s still at scopin
			Male		The pipeline route map does not show the specific conservation areas that could be traversed by the pipeline, the study should also consider what needs to be protected on privately owned land.	This is noted.
			Male		Where will borrow pits be located, and what is the distance of these proposed facilities from the pipeline corridor?	A response w response now closer to the
					Are the feeder lines part of the export pipeline? Will the project establish a grievance mechanism? Is the map you have presented the same map that appeared in the papers?	A response w now is as foll EACOP but t The project is be used. The project te map shown a

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
				Advisor	stakeholder engagement; however, we do not feel it is possible to have active engagement by having only two rounds of engagement. There should be an engagement mechanism that will make the process practical and involve the affected communities.	stakeholders project. We a information C the concerns
			Female	Program Advisor	Impacts related to fragmentation of communities and loss of social capital for persons that may be resettled should be addressed by the study.	This is noted.
					We expected RSK and EACOP team to provide us with detailed information about the proposed project. We cannot talk about such a new concept and complex process based on limited information. We cannot discuss such a complex project based on a map. The legislation is clear that sufficient information should be given to those that are going to be consulted. The kind of information presented would not be allowed in other countries.	Today we are detailed studi the LIDAR de
					The composition of the team is okay, but we do not know how long the ESIA process will take and there is a risk of collecting insufficient information. Some people come from the field and make generalisations about the project area. Also some species take a lot of time to be recorded. It would be important to examine the proposed ESIA team composition and the terms of reference.	What we are route. If we d specialists, a based approa
					Regarding impacts, issues of compensation and resettlement are the biggest issues in Uganda. Local communities are weak compared to the companies, and the government often forcefully evicted and this leads to suffering of the affected persons. For example, for Karuma Dam, people were displaced in 2012, and up to now, they are not duly compensated and the project is set to end next year. How will you guarantee that those affected by the project will be resettled and compensated in a timely manner? If the compensation is a long process, by the time they are paid the money has lost its value.	This is noted.
					There should be a framework for tracking resettled persons, as they tend to settle near or within protected areas.	This is noted.
					The project should have developed a project brief. Some information should have been provided in the project brief. The purpose of the project brief is to give information for	This is noted.

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					A consultation meeting should have the stakeholders that are informed about the proposed project, and photos should be taken during the meeting.	It should be n that procurem shall be happ
					We would like detailed information on what is included in the associated facilities so as to evaluate the application of IFC Performance Standards on associated facilities.	This is noted.
					Who will be the implementing agency for land acquisition? We know that in Tanzania it is the TPDC. Land for land compensation has its issues in Uganda.	This is noted.
					Can the team elaborate more on IFC Performance Standard 7 (Indigenous Peoples)?	We are carry presence or a
					Also can you define what you mean by security in your presentation? What is entailed in the security component among the social themes?	The mention the security c pipeline. This undertaken a
					How do you intend to undertake gender impact assessment?	A response w response nov studies that c
			Male		Is there a mechanism to track the project -affected people long after they have been displaced?	A response w response nov issues of rese ensure that th prior to the pr
			Male		We shall need the study to present a list of consultants to avoid conflict of interest.	This is noted.
			Male		Targeted assistance for the vulnerable groups, what will the process involve?	A response w response nov initial stakeho continue with assessment.
			Male		The map you provided does not include GPS data and this kind of information will not help to give meaningful concerns. It does not show protected areas on the Uganda-Tanzania pipeline route.	This is noted.
			Male		How will you access the proposed pipeline route if service	Regarding se

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Coordinator	Considering the project will involve transportation of heavy load materials (logistics) the study should consider the nature of roads vis-à-vis public use.	This is noted.
			Male	Coordinator	Cultural institutions should be included among stakeholders to be consulted especially on issues related to history and culture.	This is noted.
			Male	Coordinator	Important legislation has been left out, such as the National Physical Planning Standards and Guidelines. Why leave out reference to the strategic environmental assessment?	This is noted.
			Male	Coordinator	You have listed the IFC performance standards; however, the IFC also provides guidelines for infrastructure development of that nature.	This is noted.
			Male	Coordinator	There is need to develop an environmental sensitivity atlas for the area that is covered by the pipeline.	This is noted.
					Consultations are a key component of the studies. In a similar engagement by Total/Tullow in September 2015 for the upstream project, the team said they would come back and consult and to this date, we are still waiting to hear from them.	Studies for th
			Male	ESIA liaison	Information disclosure under infrastructure projects can either be proactive or reactive. Are we going to retain the presentations that have been shared with us today?	Information w the pipeline c
			Male	ESIA liaison	But if your problem is to guard against confusion, how will you guard against recorded information and will you not create more confusion if limited information is given to stakeholders?	Useful inform
			Female	Biodiversity Lead	Given the nature of the project, it is surprising that only subjected to a limited EIA. It should also consider the strategic environmental assessment.	The project is assessment i
			Female	Biodiversity Lead	On the aspect of cross-border participation, what are the provisions and strategy for transboundary consultations?	A response w response nov part of the ES transboundar
			Female	Research Associate	The study should indicate the names and number of rivers and forest reserves to be traversed.	This is noted.
			Female	Research	Will the Buliisa [Tilenga] feeder line cross the Nile? If so, the study will need to consult neighbouring countries such as	The Buliisa fe

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
					It will be important for the developer to build trust in order for us to have meaningful engagement and see us as people who can add value to the process.	This is noted.
					In addition to crops being predominant in the areas along the pipeline route, there are also wetlands and other ecological resources.	This is noted.
					What is the plan for disposing of material from the construction sites (waste management)?	A response w response nov for the projec
					It appears that the pipeline will cross Kagera River, one of the longest tributaries to the Nile. Do you intend to consult the Nile Basin Initiative on issues related to transboundary impacts?	A response w response nov it is the body
			Male		What will be the make of the pipeline? This needs to be considered in the EIA. Can you elaborate how you will address greenhouse gas emissions and land use change? Uganda has a target to reduce greenhouse emissions by 2030.	A response w response nov an outer prot determined a
			Male		Most of the laws concerning the environment and social impacts are under review or obsolete. For instance, the Third Schedule to the National Environment Act is likely to grow in scope. Some of these issues might need to be included in the EIA report.	This is noted.
			Male		The study does not seem to have an elaborate social impact assessment. The team might need to look at the draft bill on social impact assessment.	This is noted.
2 June 2017	National Government	Wetlands Management Department (WMD)	Male	Principal Wetlands Officer	In addition to the National Environment Act, there is a need to consider the National Wetlands Policy, Forest and Tree Planting Act and Riverbanks and Wetlands Regulations.	This is noted.
			Male	Principal Wetlands Officer	There is a need to map out all the important biodiversity areas along the pipeline route.	This is noted.
			Male	Principal Wetlands Officer	There is a need to have a wetland specialist on the team. In terms of an ecosystem, a wetland cannot be covered by a hydrologist or a biodiversity specialist.	This is noted.
				Principal	Wetlands along the proposed pipeline corridor should be	

Meeting Date	Stakeholder Group	Meeting	Gender	Position	Questions or Concerns	Response P
			Male	Principal Wetlands Officer	The engineering designs should consider a suspended pipeline over wetlands instead of horizontal directional drilling (HDD). Experience from other infrastructural projects such as roads has shown that construction through a wetland takes between six months to two years and this causes a disconnect of organisms in the wetlands. Where roads have been suspended over wetlands, there is a temporary disruption, but thereafter, the wetland is able to function properly.	This is noted.
			Male	Principal Wetlands Officer	Developer should provide the ministry with volumes of water that will be required for the entire scope of activities (camps, pipeline, construction activities). Thereafter, as a Ministry, we can advise on how and where the water will be abstracted.	This is noted.
			Male	Principal Wetlands Officer	There is a need for another engagement, after the study has confirmed the coordinates of the route and affected wetlands identified.	This is noted.
			Male	Regional Wetlands Coordinator	Are VECs the same as sensitive ecological areas?	VECs include others that m environment.
			Male	Regional Wetlands Coordinator	When will the stakeholders have site visits to acclimatise with wetlands that may be affected?	A response w response nov throughout th
			Male	Assistant Commissioner	Has the study team identified the fragile ecosystems that are going to be traversed along the pipeline?	A response w response nov undertaken th interaction wi
			Male	Assistant Commissioner	As a country, we do not have detailed biodiversity data along the stretch where the pipeline route is proposed to pass. We therefore need to pay attention not to destroy resources that may be important to livelihoods.	This is noted.
			Male	Assistant Commissioner	Are there plans to achieve no net loss in critical habitats? For whatever is destroyed, will there be offsets created?	A response w response nov minimize rest as to whether management
						A response w response nov nature Const

APPENDIX E PRELIMINARY PROJECT IMPACTS ASSESSMENT

Key to Table

B	Beneficial
NS	Not significant impact
PS	Potentially significant
	No effect on the VEC. Where the project component, mode, impact and mitigation cells are also greyed out, there is either no impact or a not significant impact on all of the VECs, with the exception of cultural heritage, where there may, on occasion, be a beneficial impact of increased knowledge as a result of finds
Bold text	The impact assessment includes accidental impacts

Definition of Significance

Potential impacts were rated as being not significant (NS), potentially significant (PS) or beneficial (B) using the following definitions:

1. Not significant residual impacts are those effects which, after good design and operational practices are applied:
   i. occur to a VEC in a localised manner over a short period of time similar to natural variation and are unlikely to have any measurable effects on the integrity of the VEC as a whole; or
   ii. have a negligible effect on communities, are of very short duration, are extremely localised and/or affect communities in a manner similar to small random changes due to natural socio-economic fluctuations
2. Potentially significant residual impacts are adverse impacts that do not meet the definition of ‘not significant’. These impacts will be addressed in the ESIA.
3. Beneficial impacts are positive effects on environmental and socio-economic VECs. These impacts will be addressed in the ESIA.

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
1	X					Surveys during design phase (e.g., stakeholder engagement, baseline field surveys, site visits, G&G surveys)	Physical presence of people, vehicles and equipment	X	X	X	X			Temporary and short-lived disturba of alien invasive species; potential chance finds; small beneficial effec supply of goods and services; work disruption of access to land and res
2	X	X		X		Land requirements - temporary and permanent right-of-way (RoW), access roads, temporary construction facilities (e.g., camps,	Land purchase or lease Change of land use Access restriction	X	X	X	X			Disruption to movement of wildlife; habitat; temporary loss of habitat; c habitat; increased hunting and poa Effects on land use, e.g., agricultur livelihoods; effects on tourism and to land and resources, e.g., water; disruption of access to infrastructur access to beach and intertidal area

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
19		X				RoW, AGIs, temporary facilities, other works	Use of vehicles and equipment	X	X	X	X			Effect on water quality of sediment and stability effects; soil loss; soil c and vegetative plant material, effec crops or vegetation
20		X						X	X	X	X			Particulate matter; dust nuisance; C environment for community resultin
21		X						X	X	X	X			Disturbance of known and unknown
22		X						X	X	X	X			Disturbance to cultural heritage; da

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
44		X	X			Pipe inspection	Use of radioactive materials	X			X			Worker health effects
45		X				Field coating	Coating of pipe	X	X		X			Effects on surface water, groundwa handling
46		.	X			Hydrotest (including drying)	Abstraction of water	X			X			Depletion of stream flow (biodiversi groundwater; use of community wa
47			X				Testing	X						Change in acoustic environment fo disturbance
48			X				Disposal of hydrotest waters	X			X			Potential for transfer of alien specie Lake Albert and Lake Victoria. Effe quality, community health and fishe
49						Backfilling	Movement of soil	X			X			Soil erosion; soil loss; soil compact support crops and vegetation

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
67		X	X				or non-authorised personnel	X		X	X			Damage to property and infrastruct
68				X				X		X	X			Increased access to cultural heritag
69		X				Regional road improvements and upgrades	*See construction machinery and workforce activity above*							
70		X	X	X			Road operation				X			In-migration encouraged by use of potentially leading to community he disruption; inflation; potential posit e.g., easier access for tourism, safe and other physical resources
71		X	X		X	Vehicle use	Vehicle refuelling	X	X	X			X	Effects on wildlife, surface water, g from fuel spillage

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
94				X		**Block valve operation (power supplied from pump station, CPF via high-voltage cable along pipeline)**	**Failure of valve during a spill or causing a spill if failure occurs during maintenance**	**X**		**X**	**X**	**X**	**X**	**Effects on soil quality, surface-w community health and wildlife fro**
95				X		Maintenance activities, e.g., block valve maintenance, clearance of vegetation along easement, maintenance and repairs of erosion control structures	Vehicle movement (personnel and materials)	X			X			Wildlife and community disturbance
96		X	X	X					X	X	X			Change in acoustic environment fo disturbance; light, odour and dust c challenges; social cohesion; humar increase in traffic

Item Number	Pre-Construction and Early Works	Construction and Pre-commissioning	Commissioning	Operations	Decommissioning	Activity	Aspect (of Activity Causing Effect)	Project Component			Mode			Potential
								Pipeline	Temporary Construction Facilities	Permanent Project Facilities	Normal Operations	Abnormal Operations	Accidental Events	
113				X		Operation of AGI helipad	Helicopter movements			X	X			Wildlife and community disturbance
114				X		AGI maintenance	Access for cranes and other machinery			X	X			Traffic disruption; damage to comm safety

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APPENDIX F ESIA PROJECT TEAM AND CVS

Table F-1 ESIA Project Team

Name	Years of Experience	Education	Project Role/Position
RSK ESIA Team			
Dr Carolyn Young	20+	BSc (Hons) (1st Class) Geology, PhD Geophysics/Tectonics	Uganda ESIA project manager
Nikki O'Donnell	18	BSc (Hons) Environmental Biology and French, MSc Environmental Science	Biodiversity technical expert lead
Dr Hilde Van Vlaenderen	30 +	Licentiate in the Psychological and Pedagogical Sciences, Doctor of Philosophy, thesis topic: 'Social cognition in an African context'	Stakeholder engagement and social technical expert lead
Dr Hamdi El-Ghonemy	29	BSc Geology, MSc, PhD Hydrogeology	Physical environment (onshore) technical expert lead
Dan Clare	13	BSc (Hons) Environmental Science, IOA Diploma in Acoustics and Noise Control	Noise lead
Dr Srinivas Srimath	24+	Bachelor of Civil Engineering, MSc Environmental Engineering, PhD Air Quality Modelling and Measurement	Climate and air quality lead
Eco & Partner ESIA Team			
Eddie Luyima	15+	MSc Environment Management, SOAS, Bachelor's Degree in Environment Management	Uganda ESIA pipeline in-country manager
Amos Mafigiri	10 +	BA Environment Management	Field survey coordinator and in-country logistics
Frank Lugemwa	10+	BA (Hons), MA Land Use Planning and Regional Development, Postgraduate Diploma in EIA	Stakeholder engagement specialist
Dr Alex Mukasa	11	Bachelor of Veterinary Medicine, Master's degree in Livestock Development Planning and Management	Livestock specialist
Dr Dauda Batega	10+	BA Social Sciences, MA Sociology, PhD Sociology	Social and stakeholder engagement

Table F-1 ESIA Project Team

Name	Years of Experience	Education	Project Role/Position
Stephen Odong	13	Bachelor of Laws, Postgraduate Diploma in Legal Practice	Social and stakeholder engagement
Emmanuella Wanyoto	5	BA (Hons) Social Sciences, Postgraduate Diploma in Procurement and Supply Chain Management, Certificate in ESIA	Resettlement and in-migration specialist
Deo Okure	5	BSc Mechanical Engineering, MSc Energy and Environmental Management (O+G)	Climate and air quality
Abraham Ochola	5	Bachelor's degree in Environmental Management, Certificates in Participatory Rural Appraisal and Community Action Planning; Intro to GIS Applications; Environment and Climate Change; Oil and Gas; Air Quality and Development Control	Noise
Syliver Wadamba	16+	BSc Geology/Chemisty, Ordinary Diploma in Civil Engineering, PM in Watershed Management, MSc Tropical Hydrogeology, Postgraduate diploma in Groundwater Exploration, Exploitation and Management.	Hydrology
William Okello	21	Bachelor of Biomedical Laboratory Technology, MSc Environmental Science and Technology, Doctorate in Natural Sciences	Water quality specialist
Robert Naguyo	20	BSc Geology/Chemistry, PM Water Resources Survey, Certificates in: Contracting and Contract Management; GIS Data Management for Groundwater Modelling	Hydrogeology, soils and geology
Dr Robert Kityo	16	BSc, MSc, PhD Zoology	Biodiversity
James Kalema	20+	BSc (Hons) Botany and Zoology, Msc Botany, PhD Botany	Terrestrial flora specialist
Prof. Derek Pomeroy	30+	Natural Sciences Tripos (Cambridge), PhD Animal Ecology	Avifauna
Dr Timothy Twongo	25+	BSc Zoology and Botany, MSc Biology with focus on hydrobiology and fisheries, PhD Zoology – fisheries biology and Ecology	Flora specialist
Dr Mathias Behangana	20+	PhD. Environment and Natural Resources, MSc Zoology	Herpetofauna specialist
Michael Daka	19+	BSc Civil Engineering, MSc Engineering	Road engineer and traffic surveyor

Table F-1 ESIA Project Team

Name	Years of Experience	Education	Project Role/Position
Deogratius Sekimpi	10	Bachelor of Medecine, Bachelor of Surgery, MSc in Occupational Medicine, Certificate in Epidemiology and Disease Control, WHO Senior Level Epidemiology and Disease Control Course	Health specialist
Katherine Gotto Wilson	20+	BA (Hons) Zoology, Advanced Management Systems Auditor	Social peer review
Opesen Chris Columbus	10	BA Social Science, MSc Development Management, PhD Social Anthropology	Sociologist
Julius Opio	5+	BSc Technology (Chemistry), MSc Physical Land Resources – Soil Sciences	Soil specialist
Mark Olokotum	5	BSc Fisheries and Aquaculture, MSc Zoology,MSc Limnology and Wetland Management	Aquatics
Ochieng Hannington	14	BSc Biomedical Laboratory Technology, Msc Environmental Science – Limnology & Wetland Ecosystems	Benthic macro-invertebrate specialist
Perpetra Akite	12	BSc Botany, PhD Plant Pathology	Invertebrate ecologist
Sarah Musalizi	10	BA Tourism and Geography, Postgraduate Diploma in Museum and Heritage Studies, MSc Palaeontology for Lacustrine Environments	Heritage specialist
EACOP			
Dominique Popineau	35	Chartered Engineer with Physics Master's in composite materials	Pipeline engineer

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RSK CVs

Carolyn Young, director

Core skills

- Environmental and social impact assessment
- International oil and gas pipelines
- Project and contract management
- Application of IFC and other IFI requirements
- Due diligence audits of ESIAs
- Stakeholder engagement
- Environmental and planning consents
- Project environmental management systems and auditing during construction
- Pipeline routeing and construction
- Field Survey Management
- Geological assessment

Details

Qualifications

BSc (Hons) (1st Class) Geology

PhD Geophysics/Tectonics

Other

IEMA Foundation Course in Environmental Auditing

Sibley Prize for Geology

Sir Halford J Mackinder Prize for Geography

PROFILE

Carolyn is a director of RSK Environment. She has over 20 years' experience as an environmental consultant, focusing on the oil and gas sector, and in particular large diameter international pipelines projects. Her work has included advising clients on environmental permitting, management and production of high-profile environmental and social impact assessments (ESIAs) to International Financial Institutions (IFI) standards, and audits of project implementation to IFI standards. Her work has also involved development and audit of environmental and social management systems for major development projects during construction and operation, meeting both European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC) requirements. Her work has focused particularly on upstream and midstream development projects within the UK, Africa, former Soviet Union, South America and Turkey.

Carolyn has been the environmental project manager for several major projects including the Trans Adriatic Pipeline (TAP) and the high profile Baku–Tbilisi–Ceyhan (BTC) pipeline for BP in Azerbaijan. She was also seconded to BP for several years where she was responsible for assuring full compliance of their projects with IFC and EBRD requirements. This included liaison with NGOs and other stakeholders and scoping and managing a range of environmental and social surveys and assessments required to support the permitting and construction of BP projects in Azerbaijan, Georgia and Turkey.

Carolyn has specialist skills in the following areas:

- managing ESIAs and securing consents for complex infrastructure planning projects
- managing and undertaking environmental and social impact assessments to national, European Union (EU) and IFI requirements, in particular IFC PS1-8 and EBRD PR1-10
- filed survey planning and management
- managing dispersed, multilingual project teams
- the oil and gas industry, including pipeline routeing, planning and construction, full field developments
- infrastructure developments in the UK and internationally
- managing stakeholder consultations and disclosure during the ESIA process to meet IFI requirements
- developing, implementing and auditing environmental management systems during construction and transition to operational phase.

1

Key project experience

Trans Adriatic Pipeline (TAP), production of supplementary lender documentation, 2016–ongoing

RSK advises the TAP project on meeting lender requirements (including EBRD, EIB, IFC and Equator Principles standards). As part of this work, Carolyn is project director for producing a series of supplementary documents required by the lenders for the TAP project. This includes a project-wide cumulative impact assessment, critical habitat assessment, ecosystem services signposting report, and associated facilities E&S risk assessment.

Trans Adriatic Pipeline (TAP), ESMS contractor for construction phase, 2015–ongoing

Carolyn is project director for delivering RSK's ESMS contractor services for the three-year construction phase of the TAP project. This includes provision of all site based environmental, social and cultural heritage personnel across all three countries (Greece, Albania and Italy) and offshore. It also includes production of several reports including biodiversity action plans, waste management plans, IED conformance plans, and all onshore and offshore monitoring activities before, during and after construction in Italy to meet regulatory requirements.

Tullow, Kenya export pipeline ESIA screening study, 2014

Carolyn was project director for the ESIA screening phase route selection and refinement work on a crude oil pipeline from the Lokichar oilfield in Kenya to the Lamu port area on the Indian Ocean. The work has included producing a detailed screening report for several route corridor options, and working with the engineering contractor to define the optimum route. The work also involved field and aerial surveys of the route options in Kenya as part of a multidisciplinary team.

Tullow, CNOOC and Total, Uganda Export Pipeline, 2013–2014

Carolyn was project director for the ESIA screening phase route selection and refinement work on a crude oil pipeline from Uganda to the Indian Ocean coast in Kenya or Tanzania. The work has included producing a detailed screening report for three route options of approximately 1300 km length, identifying and mapping key environmental and socio-economic constraints along the routes and at the three potential coastal terminals and marine offloading facilities. The work has also involved producing a detailed scope of work for the scoping and ESIA phases of the project.

ExxonMobil, Chad export project EIA hindcast - Chad and Cameroon, 2012

Carolyn was one of two international pipeline ESIA experts invited to join an internal ExxonMobil team to undertake a 'hindcast' of the environmental impact assessments (EIAs) undertaken 10 years before for the IFC-funded Chad Export project. The project includes an extensive oilfield development in Chad and over 1000 km of oil export pipeline through Chad and Cameroon to a floating production, storage and offloading unit offshore of Cameroon. The 'hindcast' team reviewed all relevant project documentation and spent two weeks in-country visiting key project sites and project-affected communities. The 'hindcast' focused on assessing the accuracy of environmental and social impact prediction within the EIAs and the success of the proposed mitigation measures, including offset projects, in order to learn lessons for future ESIAs.

European Commission/World Bank, Trans-Caspian Pipeline – Turkmenistan & Azerbaijan, 2013–ongoing

Carolyn is project director for the scoping phase of the Trans-Caspian Pipeline project, which includes preparation of an environmental and social scoping report, legal register and stakeholder engagement plan for a pipeline from Turkmenistan to Azerbaijan. She is overseeing data gathering, stakeholder consultation and field surveys in Azerbaijan and has presented results of the initial phase of work to the steering group, which included representatives from the government of Azerbaijan and Turkmenistan as well as the European Commission and World Bank.

BP, SCPX project – ESIA manager, SCPX Azerbaijan, 2011–2014

Carolyn was project manager for the South Caucasus Pipeline Expansion (SCPX) ESIA in Azerbaijan, with overall responsibility for engineering interface with respect to design and routeing issues,

baseline surveys and coordination of field teams, consultation activity, reporting and review. The ESIA needed to meet BP internal standards and the requirements of the World Bank. The SCPX project involves expansion of an existing approx. 680-km gas pipeline system from the Caspian through Azerbaijan and Georgia to the Turkish border.

Peru LNG, pipeline and LNG terminal construction audits – Peru, 2008–2011

Carolyn was the project manager of a team undertaking a series of three annual environmental, social, health and safety audits of Peru LNG's construction activities of a trans-Andean LNG pipeline and LNG terminal and loading facility on the Pacific Coast in Peru. The audits were part of Peru LNG's obligations to the IFC (project lenders). She undertook the environmental component of the audits to ensure compliance of construction activities with the construction-phase environmental and social action plan (ESAP), IFC performance standards and ESIA commitments.

BP, South Caucasus Pipeline Expansion (SCPX) project – BP environmental advisor, 2010–2011

Carolyn was embedded within the project team, initially acting as BP's environmental and social manager during the early planning (appraise and scoping) phases of the SCPX project. This was a full-time seconded position within the integrated project team, based in the project engineering offices in London.

BP, Western Route Export Pipeline (WREP) sectional replacement project – Georgia, 2009–2013

Carolyn was the project director responsible for overall ESIA production to EU, Georgian and BP internal standards. The WREP SR project involved replacement of redundant sections of existing oil pipeline with new pipeline sections and removal from service of the old sections of pipeline. Work included ESIA scoping; coordination and scoping of baseline surveys; defining requirements and coordinating public consultation; and regular liaison with Georgian regulator and the client.

Petrofac Engineering, Karachaganak phase III development – Kazakhstan, 2008

Carolyn was project manager for the ESIA for the Karachaganak phase III full field development, based full time in the FEED contractor's offices in London. She was responsible for overall production and coordination of the ESIA to IFC standards, liaison with client, engineering contractors, international and local subcontractors. She was also responsible for providing environmental and social input to the engineering design process, and providing advice to the client on IFC requirements, ESIA process and content.

BP/BTC Co., environmental and social manager – Azerbaijan, 2004–2007

Carolyn worked within the BP/BTC organisation in Baku, Azerbaijan and was responsible for supporting environmental and social (ES) management systems within BTC and SCP pipeline projects for both construction and operations phases. Her responsibility was to provide assurance that project activities were performed in accordance with corporate and project policies, procedures and plans, and ensuring project ESMS met IFC and EBRD standards. Her responsibilities included supporting the assurance process for E&S issues across three countries (Azerbaijan, Georgia and Turkey), periodic internal audits to ensure BTC/SCP compliance with ESIA and ESAP commitments and interface during lender (IFC and EBRD) audits.

BTC Co. (BP Azerbaijan), Baku–Tbilisi–Ceyhan (BTC) pipeline – Azerbaijan, 2001–2003

Carolyn was the project manager of the ESIA for the Azerbaijan section of the BTC oil pipeline (and associated facilities including pump station, pig traps, construction camps and access roads). The project applied for lender funding, so the ESIA was required to meet IFI requirements. Carolyn was responsible for liaison and coordination with client, team members and local scientists; management of field surveys, report production and translation; and attendance at public meetings during the disclosure phase of the ESIA. She also provided environmental support to the pipeline and design engineers and led the survey and sampling of contaminated land along the pipeline route. Other responsibilities included production of the supplementary lenders information pack (SLIP) and input to Contractor Control Plans for the BTC pipeline across Azerbaijan, Georgia and Turkey.

3

Nikki O'Donnell, biodiversity specialist

Core skills

Environmental and ecological impact assessment

Biodiversity studies in accordance with international guidelines, including IFC, EBRD and EIB performance standards and requirements

Critical habitat assessment

Biodiversity offsets

Design and implementation of biodiversity monitoring programmes

Ecological due diligence reviews

Details

Qualifications

BSc (Hons) Environmental Biology and French (distinction)

MSc Environmental Science

Memberships

Certified Environmental Practitioner – Impact Assessment Specialisation

Full member of the Environment Institute of Australia and New Zealand

Member of the International Association of Impact Assessment

Languages

English – mother tongue

French – fluent

PROFILE

Nikki is a biodiversity specialist and principal environmental scientist with 17 years' experience working in the resource industry, government and environmental consultancy. She has worked on projects in the UK, Albania, Algeria, Australia, Azerbaijan, Cote d'Ivoire, Greece, Italy, Sudan and the Philippines.

Nikki has managed a large number of environmental and social impact assessments (EIAs) for complex infrastructure projects, including oil and gas pipelines, gas collection facilities, oilfields, coal mines, power lines, water treatment facilities, ports, railway lines and gas-fired power stations, and in doing so has successfully obtained environmental approvals under a range of legislation.

Nikki has specialist skills in the following areas:

- route/site selection using a range of multi-criteria analysis tools
- environmental planning in design
- ecological impact assessment, mitigation, monitoring and management
- critical habitat assessment
- design and conduct of terrestrial fauna and marine megafauna surveys
- development and implementation of terrestrial fauna and marine megafauna species management plans
- biodiversity offsets
- rehabilitation, revegetation and biorestoration
- cumulative impact assessment
- development and delivery of environmental awareness training.

RSK

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Key project experience

PIPELINES AND OTHER OIL AND GAS EXPERIENCE

TAP, biodiversity support for Trans Adriatic Pipeline – Albania, Greece and Italy, 2014–ongoing

Nikki is currently the biodiversity lead for several studies on the 878-km Trans Adriatic Pipeline, which traverses Albania, Greece, Italy and the Adriatic Sea. The scope of work includes a critical habitat assessment, biodiversity action plans and an offset strategy in accordance with the combined requirements of the International Finance Corporation (IFC), European Bank for Reconstruction and Development and European Investment Bank. Nikki is also actively involved in the ongoing international lender negotiations for this project, in relation to biodiversity.

Vioco Petroleum, Gazelle project ESIA – Ivory Coast, 2014–2015

Nikki coordinated the ecological component of an environmental and social impact assessment (ESIA) for an offshore gas platform, pipeline and onshore gas processing facility in Ivory Coast, in accordance with relevant IFC performance standards. Nikki designed and led a nesting survey for several species of marine turtles protected under Ivorian and international legislation, including in-country training and supervision of Ivoirian scientists.

Confidential client, gas processing plant – East Africa, 2014

Nikki has been involved in the desk-based assessment and surveys for the selection of a gas processing plant in East Africa.

Wood Group Kenny, Kenya export pipeline screening report – Kenya, 2014

Nikki prepared the biodiversity component of the screening report for an 850–900-km crude oil pipeline between the Lokichar basin and Lamu Port in Kenya.

Arrow Energy, Bowen gas project and Bowen gas pipeline – Australia, 2014

Before joining RSK, Nikki was part of the team preparing a net gain biodiversity offset strategy for Arrow Energy's Bowen gas project and Bowen gas pipeline in Central Queensland, Australia. The biodiversity offset strategy was required in order to meet the Australian Federal Government's Environmental Offsets Policy and hence secure development consent for the project. Nikki's role was to determine the project's whole-of-life offset liability, prepare a cost–benefit analysis for acquitting the project's offset requirements, identify potential sites for direct offsets to meet the project's Stage 1 requirements, complete offset calculator assessments for the Stage 1 offset site(s) and prepare a report for the Australian Department of Environment outlining the above.

Arrow Energy, Surat gas project – Australia, 2013

Before joining RSK, Nikki was part of the team preparing a biodiversity offset strategy for Arrow Energy's Surat Gas Project in Queensland, Australia. This offset strategy was submitted to the Australian Department of Environment in November 2013 and forms part of Arrow Energy's conditions of approval for the Surat gas project.

Santos, Comet Ridge environmental management plan – Central Queensland, Australia, 2007–2008

Nikki completed work on the development of an environmental management plan for the Comet Ridge Petroleum Project in central Queensland. Coal seam gas exploration and production activities are currently being carried out within a 5000-km^2 area under multiple environmental authorities and licences. The environmental management plan's aim was to obtain regulatory approval for all current and future activities under a single environmental authority.

2

Coordinator General, Western Corridor recycled water project – Australia, 2006–2007

Nikki was EIA manager for the Western Corridor recycled water project in South East Queensland. Two separate voluntary ESIAs were prepared for the project, consisting of three new advanced water treatment plants, a 200-km pipeline and associated balance tanks and pump stations. Nikki played a major role in community consultation and stakeholder relations throughout the preparation of the ESIAs and into project construction. On completion of the ESIAs, Nikki went on to become environmental manager for the Eastern Pipeline Alliance, responsible for construction of part of the project.

CCIC, environmental management of Baku–Tbilisi–Ceyhan and South Caucasus pipelines – Azerbaijan, 2003–2005

Nikki was the environmental manager (on rotation) for the construction contractor of the Azerbaijan leg of the Baku-Tbilisi-Ceyhan oil pipeline and the South Caucasus gas Pipeline, between November 2003 and March 2005. Based at construction site offices, her primary responsibilities included ensuring construction activities were carried out according to stringent guidelines set by international lenders, carrying out regular audits and site inspections, attendance at weekly project progress meetings, developing and implementing training programmes for key staff, and producing environmental assessment reports as and when they were required, e.g. for new project waste disposal sites. Nikki managed a team of ten local HSE field officers in addition to the project waste management subcontractor.

BP, Baku–Tbilisi–Ceyhan and South Caucasus pipelines ESIA– Azerbaijan, 2003

Nikki contributed to the ESIA reports for the Baku–Tbilisi–Ceyhan oil pipeline and South Caucasus Pipeline in Azerbaijan. The ESIAs were carried out in accordance with World Bank Guidelines and, for the BTC pipeline, was used to acquire financing and support from international lenders for the project. Nikki was subsequently appointed environmental manager for construction of the pipelines, leading to enhanced insight into the implementation, practicality and cost-effectiveness of the mitigation measures recommended in the ESIA.

JP Kenny Engineering for Petrodar Operating Company, Melut basin oil pipeline – Sudan, 2003–2004

Nikki prepared the ecology section for the EIA for an 800-km oil pipeline from the Melut basin in southern Sudan to Port Sudan. Her work included managing in-country surveys and mentoring of in-country specialist support.

Grain LNG, new LNG import facility at the Isle of Grain – UK, 2001–2002

Nikki managed the onshore ecological component of an ES for the Isle of Grain LNG project in the UK. The project involved the construction of a new importation jetty, LNG storage facilities and a cryogenic pipeline adjacent to a Ramsar site (a wetland of international conservation importance) in the Medway Estuary. The ES was successfully used to obtain ministerial consent to construct the project; Nikki subsequently continued work relating to protected species (great crested newts, badgers and water voles) on the site during construction.

JGC Corporation, Hassi R'Mel gas collection facility ES and Ourhoud oilfield development ES – Algeria, 2001

Nikki contributed to both environmental statements and acted as the primary liaison between the English-speaking Japanese client and the French-speaking Algerian subcontractors and regulator for both projects.

3

Hilde Van Vlaenderen, technical director

Core skills

Quantitative and qualitative social research skills

Programme evaluation

Livelihood and gender analysis

Indigenous people studies

Social baseline development

Social impact assessment

Stakeholder analysis and engagement

Development of social framework management, resettlement action, community development, indigenous people and influx management plans

Cross-cultural communication strategies

Adult training methodologies and workshops facilitation including conflict resolution strategies

Details

Qualifications

Licentiate in the Psychological and Pedagogical Sciences

Doctor of Philosophy, thesis topic: 'Social cognition in an African context'

Memberships

Member of International Association for Impact Assessment

Languages

English – fluent

Dutch – good

French – good understanding and verbal communication, basic writing

PROFILE

Hilde is a technical director of social studies at RSK. With 25 years of experience, she is a recognised expert in social studies, including social impact assessments, stakeholder identification and engagement, due diligence, land acquisition and involuntary resettlement, community development and social management at all project stages. She provides strategic advice to enable clients to perform to international benchmarks.

Hilde has conducted and led social assessments and studies in compliance with Equator Principles, IFC requirements, African Development Bank and other financial institutions and has project experience in Africa, CIS countries, Europe and South America.

Hilde has experience working in academic (as a lecturer), not-for-profit and corporate milieus. She has sound social science skills and adopts an adaptive problem-solving approach to her work, which focuses on translating international standards into culturally appropriate local solutions. Strong cross-cultural and cross-discipline communication skills combined with good team management enables her to provide high-standard results, buy in from stakeholders and resolution of conflict situations.

Hilde is passionate about her work, driven by a desire for achievement and application of international standards and innovative strategies and solutions. She has expertise in building capacity and developing and leading cross cultural teams.

Hilde has lived in Belgium, UK, France, Madagascar, South Africa and Tanzania.

Hilde has specialist skills in the following areas:

- strategic planning of social baseline and social assessment studies
- evaluation of social assessments and programmes
- developing and leading social assessment teams, including cross-discipline teams in order to develop holistic impact assessments
- provision of advisory services to clients in terms of their 'social licence to operate' throughout the life of the projects
- building capacity and training of social scientists.

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Key project experience

Social impact studies

Conducting and managing social and human rights impact studies at concept, pre-feasibility and feasibility stages (compliant with Equator Principles, IFC Performance Standards and other international best practice) including stakeholder engagement

Oil and gas

- Trans Adriatic Pipeline Project cumulative impact assessment; Greece, Albania and Italy; 2016–ongoing: manager of the social aspects of the cumulative impact, including identifying and assessing VECs
- Endeavor and Starenergy, Songon integrated power project, Ivory Coast, 2016–ongoing: social impact assessment and stakeholder engagement manager
- Total, exploration drilling in Block 11, Cyprus, 2016: social impact assessment and stakeholder engagement
- Rumaila Operating Organisation, water treatment plant and water pipelines, Iraq, 2015: social lead for social impact assessment study and stakeholder engagement
- Vioco, Gazelle offshore gas project, Ivory Coast, 2014: social impact assessment and stakeholder engagement manager
- Tullow, Lake Turkana Development Project strategic assessment, Kenya and Ethiopia, 2014: lead social specialist

Others

- Elemental, Dougou potash mine, 2015: social scoping, baseline and impact assessment study and stakeholder engagement manager
- Cape Lambert, Marampa iron ore mine, 2012: social impact assessment study
- Goviex, Madaouela uranium mine, Niger, 2011–2013: social scoping and social impact assessment and stakeholder engagement manager
- Anagold, Copler gold mine, Turkey, 2012–2015: social lead on scoping and social/human rights baseline and impact assessment study
- Elemental, Sintoukola potash mine, Congo Brazzavile, 2011–2013: scoping, social impact assessment, indigenous people study and stakeholder engagement manager
- Aldridge, Yenipazar polymetal mine, Turkey, 2011–2013: social baseline and impact assessment study and stakeholder engagement manager
- Volta Resources, Kiaka gold mine, Burkina Faso, 2010–2011: project manager of scoping and social baseline study
- Addax Bioenergy, biofuel project, Sierra Leone, 2010: social impact assessment study and stakeholder engagement manager
- Anglo Gold, Mongbwalu gold mine, Democratic Republic Congo, 2010: social impact assessment study
- Oromin, Sabodala gold mine, Senegal, 2010: social baseline and stakeholder engagement
- Banro, Namoya gold mine, Democratic Republic of Congo, 2008–2009: social impact assessment and stakeholder engagement manager
- Banro, Twangiza gold mine, Democratic Republic of Congo, 2008–2009: social impact assessment and stakeholder engagement manager
- BHP Billiton, Nimba Mountains iron ore mine, Guinea Conakry, 2006–2007: concept study social lead
- Tiomin Kenya, Kwale titanium mine, Kenya, 2005: social impact assessment and stakeholder engagement
- Southern Mining, Corridor Sands titanium mine, Mozambique, 2003–2004: social impact assessment

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- Allied Procurement Agency, Malawi Sands titanium mine, 2003: social impact assessment and stakeholder engagement

Resettlement and compensation plans

- Aldridge, Yenipazar polymetal mine, Turkey 2012–2013: development of a land acquisition plan
- Marampa Iron Ore, Marampa iron ore mine, Sierra Leone, 2012–2013: development of a resettlement action plan
- African Mining, Tonkolili iron ore mine, 2010: development of a resettlement policy framework
- Banro, Twangiza gold mine, Democratic Republic of Congo, 2008: development of a resettlement action plan

Social licence to operate – social sustainability

- Polyus Gold, Russian Federation, 2012–2013: social audits and development of community development and stakeholder engagement strategies in four operations in Russia during the operational phase (Verninskoye, Olimpiada, Kuranakh, Natalka)
- Goviex, Madaouela uranium mine, Niger, 2011–2013: advice to client on stakeholder engagement and community development during the ESIA phase
- First Quantum, MCM Guelb Mogrhein gold mine, Mauritania, 2012: sustainable development workshop with senior staff
- Suralco, bauxite mines integrated closure plan, Suriname, 2011–2015: stakeholder engagement strategy for five operations
- Banro, Namoya and Twangiza gold mines, Democratic Republic of Congo, 2008: compiling a community development plan during the ESIA phase, advice to the client on corporate strategy

Policy and community development research

This involves research related to non-energy projects and focuses predominantly on community development and land natural resource use.

The assignments completed are presented below:

- International migration and land tenure project in Senegal and France for the International Institute for Environment and Development, UK, 2004.
- Participatory community needs analysis and strategic planning for a small-scale subsistence farming project in Venda, South Africa for the Water Research Commission, South Africa, 2003
- Rural mobilisation programme in the Eastern Cape, South Africa for the Eastern Cape Development and Funding Forum, South Africa, 1992/1994
- Rwantsana community development project in Eastern Cape, South Africa for Kagiso Trust, South Africa, 1992
- Healdtown resource centre project in the Eastern Cape, South Africa for the Kagiso Trust, South Africa,1991

Other relevant experience

- Ethnobotanical study in Zaraninge Forest, Tanzania for WWF, 1999. This included participatory community methods
- World Bank, Sustainable Management of Mineral Resources Project, Nigeria, 2004: development of social baseline and management plan
- A participatory formative evaluation of a botanical training programme in Tanzania for Missouri Botanical Garden and MacArthur Foundation, USA, 1998–2000. This included travel throughout Tanzania to engage with trainees and environmental NGOs

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Dr Hamdi El-Ghonemy, associate director

Core skills

Hydrogeology

Risk assessment

Contaminated land

Groundwater modelling

Radioactive contaminated land

Environmental impact assessment (EIA)

International project management

Details

Qualifications

BSc Geology

MSc

PhD Hydrogeology

Memberships

Society of Petroleum Engineers (SPE)

Chartered Geologist (Geological Society of London)

National Groundwater Association (NGWA)

Environmental Auditor (Institute of Environmental Management and Assessment (IEMA))

Radiation Protection Supervisor (certified by HSE-approved course at AMEC NNC)

Languages

English – mother tongue

Arabic – fluent, written and spoken

French – good, written and spoken

Italian – good conversational

PROFILE

Hamdi is a senior hydrogeologist and associate director at RSK with 28 years' experience in environmental consulting, primarily in the oil and gas and nuclear sectors. He has experience with radioactive soil and groundwater contamination, environmental impact assessments, contaminant hydrogeology and modelling, contaminated land quantitative risk assessment and remediation, and groundwater resources development.

Since joining RSK, Hamdi has been responsible for managing EIAs for oil and gas projects in North Africa and the Middle East.

Hamdi has a PhD in contaminant hydrogeology from the University of Birmingham and is a Chartered Geologist with the London Geological Society and a member of the Society of Petroleum Engineers. He is fluent in Arabic and is the author of numerous technical publications.

Hamdi has lived and worked in the UK, USA, Egypt and Oman, and has managed projects in Albania, Bolivia, Northern Iraq, Libya, Syria, Qatar, Kuwait, Algeria, Greece and Sudan. He was visiting lecturer on the postgraduate hydrogeology and international development courses at Leeds and Manchester universities, respectively, where he lectured on topics including the transport of radioactive contaminants in groundwater and environmental policy in developing countries. Hamdi has specialist skills in the following areas:

- international project management and business development
- contaminant transport modelling in groundwater
- quantitative risk assessment
- radioactively contaminated land assessments
- presenting technical papers at international conferences and workshops.

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Key project experience

EACO, Uganda–Tanzania Crude Oil Export Pipeline: ESIA screening level report, 2016

RSK prepared an ESIA screening level report on behalf of the East African Crude Oil Pipeline partnership (EACOP). Hamdi was responsible assessing the groundwater conditions along the proposed route.

Trans-Adriatic Pipeline, contaminated land baseline reports – Greece, Albania and Italy, 2016

RSK was contracted to provide all the environmental, social and cultural heritage personnel and expertise to the project developer TAP during the construction of a pipeline through Greece and Albania, across the Adriatic Sea and into Italy. The contaminated land baseline task was required to satisfy the requirements of the Industrial Emissions Directive.

BG Group, Huacareta Block ESIA – Bolivia, 2014

RSK was commissioned to carry out an environmental and social impact assessment for a 2D seismic exploration programme. The work comprised a baseline survey that was carried out through RSK's local consultants.

BP Exploration (Shah Deniz) Ltd, South Caucasus Pipeline Expansion (SCPX) ESIA – Azerbaijan and Georgia, 2012

This project involved expansion of an existing 680km (approx) gas pipeline system from the Caspian through Azerbaijan and Georgia to the Turkish border. RSK prepared scoping studies and a full environmental and social impact assessment in accordance with International Finance Corporation/European Bank for Reconstruction and Development requirements. RSK has had overall responsibility for engineering interface with respect to design and routeing issues, baseline surveys and coordination of field teams, reporting and review. Hamdi was responsible for preparing all the environmental management plans.

Groupement SONATRACH-Berkine, El Merk and Hassi Berkine EMP – Algeria, 2012–present

RSK was responsible for preparing environmental management plans for both El Merk and Hassi Berkine oil and gas fields. This included the preparation of plans for air quality, contaminated land, waste management, chemical storage and pollution prevention. Hamdi was the project manager responsible for delivery of all plans and for organising the site visits.

Shell Global Solutions International BV, Al Karaana Petrochemical Plant ESHIA – Qatar, 2012–present

The impact assessment tasks included air quality modelling, noise modelling, assessment of impacts on groundwater quality and stakeholder engagement with local communities and organisations in Qatar. The ESHIA was carried out to International Finance Corporation standards.

Taq Taq Operating Company, Taq Taq oilfield ESIA – Kurdistan, Iraq, 2012

RSK was commissioned to carry out an environmental and social impact assessment for the Taq Taq oilfield to IFC standards comprising the extension of the tanker loading station, the central processing facility and the administration and accommodation camp. Hamdi was the project manager responsible for financial management, organising the field surveys, liaison with the client and writing the ESIA report.

Kuwait Oil Company and Saudi Arabian Chevron, joint operations environmental, social and health impact assessment (ESHIA) for the partitioned zone 3D seismic acquisition programme – Kuwait and Saudi Arabia, 2010–2011

The work was carried out through a local Kuwaiti environmental consultant and comprised detailed desk-based and field surveys in Kuwait and Saudi Arabia.

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Groupement SONATRACH-Agip, EIA and hazard study for RGT ROM – Algeria, 2009–2011

RSK was responsible for preparing an EIA and a hazard study for the flare gas recovery project in Rouhde Messaoud. Hamdi was the project manager responsible for client contact, delivery of all reports and financial management.

BP Exploration Libya, environmental health and safety (EHS) compliance enhancement programme – Libya, 2008–2009

RSK was commissioned to assist BP Libya in implementing a compliance enhancement programme. The objective was to demonstrate compliance with Libyan legislation. The work was carried out by RSK's local Libyan partners and comprised researching all sources of legislation in Libya and arranging meetings with relevant government ministries and departments.

Petro-Canada North Africa, ESHIA for a seismic survey in the Sirte basin – Libya, 2008

Hamdi was the project manager for an environmental baseline study and EIA for Concession 11 in the Sirte basin covering an area of 3500 km^2. The survey team comprised six Libyan academic experts and representatives from the national oil company and Environment General Authority.

Shell South Syria Exploration Ltd, ESHIA for a seismic survey – Syria, 2007

RSK completed an ESHIA on behalf of Shell South Syria Exploration in blocks 13 and 15. This work consisted of a field survey supervised by an Arabic-speaking RSK environmental scientist and supported by local Syrian experts and academics. The work also involved preparing a stakeholder engagement plan.

Shell Exploration & Production, ESHIA for a drilling programme in the Sirte basin – Libya, 2007

RSK completed an ESHIA on behalf of Shell Libya in the Sirte basin to support its drilling campaign. This work consisted of a field survey, an impact assessment workshop with Shell and an assessment of drill cuttings waste disposal options.

Veba Oil Operations (Petro-Canada), ESHIA for a seismic survey in the Sirte basin – Libya, 2006

RSK completed an EIA for 3D seismic survey work in the Hofra and Facha concessions in Libya. This work consisted of a field survey supervised by RSK and supported by local Libyan experts and academics.

Former pesticide blending facility in Sudan, 2000

Project hydrogeologist for a soil and groundwater remedial investigation at a former pesticide blending facility in Sudan. Site works included drilling supervision and hydraulic testing. Data interpretation involved performing a quantitative risk assessment using various analytical solutions of the advective-dispersion equation and modelling a pump and treat remediation system using FLOWPATH.

Contaminated industrial site in Egypt, 2000

Project manager for environmental assessment at contaminated industrial site in Egypt. Responsibilities include client contact, proposal preparation, planning the site investigation, financial management and reporting. The work in Egypt included supervising a field investigation for monitoring air quality and assessing the risk to on-site workers.

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Daniel Clare, associate director

Core skills

- Environmental acoustics
- Industrial noise assessment and control
- Construction noise and vibration assessments
- Noise prediction and modelling
- Noise control design
- Architectural acoustic design
- Environmental noise and vibration monitoring
- PPC permitting technical support

Details

Qualifications

IOA Diploma in Acoustics and Noise Control

BSc (Hons) Environmental Science

Memberships

Full Member (Corporate) of the Institute of Acoustics (MIOA)

PROFILE

Daniel joined RSK in 2014 and leads the Acoustics team. Since joining RSK, the Acoustics team has expanded quickly, both in RSK offices already with an acoustics presence and with new satellite teams. This now gives RSK a greater coverage across the UK to support internal and external clients.

He is widely experienced in the field of environmental noise and vibration analysis and assessment, as well as architectural and building acoustics. This experience extends to a wide variety of projects in the public and private sectors, including nationally significant infrastructure projects, building design (educational, industrial and recreational), transport and infrastructure, construction (design, building and compliance), urban regeneration and industrial design, permitting and compliance.

Daniel has been technical lead for several acoustic and vibration projects and project manager for a number of multidisciplinary projects throughout the UK and Middle East. Daniel has also spent three years in New South Wales, Australia working on a variety of large-scale industrial, mining and linear infrastructure projects.

An experienced noise modeller, Daniel has undertaken computational noise modelling (including AutoCAD data manipulation) and prediction work for many projects from the design phase through to the construction and operational/compliance stages. He is knowledgeable and experienced with the use and interpretation of international guidance and legislation in relation to acoustics, including identification and preparation of methodologies and consultation with regulatory bodies.

Daniel is primarily focused on delivering high-quality and innovative solutions to all aspects of noise assessment and control. He has specialist skills in the following areas:

- noise and vibration monitoring (environmental, building and occupational) using a range of instruments
- computational noise modelling using a suite of packages
- noise assessment in accordance with a host of UK and international guidance
- multidisciplinary project management – finance management, peer review, project staff management, regulator consultation and client communication
- mentoring of junior staff.

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Key project experience

POWER, ENERGY AND INFRASTRUCTURE

Qarmat Ali water pipeline environmental and social impact assessment (ESIA) – Southern Iraq, 2015

Phase 2 Qarmat Ali water pipeline ESIA and enabling works for heavy haul roads and rig road upgrades. Construction and operation of two new main source water pipelines, associated branch source water pipelines and above-ground facilities as part of the upgrade of the source water system to the Rumaila field. Operational and construction noise monitoring, computational noise modelling, assessment and production of chapter for the ESIA.

TTPOCO TaqTaq oil field – Kurdistan, 2016

Daniel was the technical lead for an ESIA chapter for proposed new oil wells, processing facilities and power plant. The work included noise monitoring, liaison with design engineers, computational noise modelling and assessment against Iraqi and World Bank standards. All phases of the project – design construction, commissioning, operation and decommissioning – were included as part of the assessment. The project covered an area greater than 100 km^2.

DBN Benzene Wison Engineering/Sabiq, Al Jubail Industrial City, Saudi Arabia - 2016

Daniel was the technical lead for an ESIA chapter for a proposed new benzene production plant at an existing petrochemical facility in the east of Saudi Arabia. The work included noise monitoring, liaison with design engineers, computational noise modelling and assessment against Saudi and Royal Commission standards. All phases of the project – design construction, commissioning, operation and decommissioning – were included as part of the assessment. The monitoring included an intensive five-day exercise across the 2 km^2 existing facility.

Transgrid, plant upgrades – Sydney, Australia, 2012–2013

Daniel was the project manager and technical lead for noise impact and harmonics assessments for compliance and upgrade works at two Sydney 330 kV substations. He undertook noise monitoring of existing operations using a B&K intensity probe. Current and harmonics measurements of capacitor banks were used to determine the influence of such harmonics on noise emissions. Analysis of intensity and harmonics data was followed by modelling, impact assessment and design of enclosures and mitigation measures.

Centrica Storage Ltd (CSL), 2015 to present

Daniel is currently working with CSL at its Easington gas terminal. Work includes a noise impact assessment for planning and environmental permitting to take account of upgrades to compressor units, including new electrically powered compressors. Daniel undertook noise monitoring at different plant suppliers throughout Europe during factory acceptance tests to prepare a detailed noise model.

National Grid Gas, modernisation programme – Peterborough and Huntingdon, 2014

Daniel has been involved with the monitoring, modelling, assessment and design of compressor station upgrades for National Grid, which includes feeding into the design process for new gas turbines at two sites. Work will continue through the design, equipment selection, noise abatement and commissioning.

CONSTRUCTION

AMCOR, B9 paper mill – Sydney, Australia, 2011–2013

As noise and vibration lead for the monitoring and assessment for the construction of the largest paper mill in the southern hemisphere (AUD $500 million), Daniel was responsible for construction vibration predictions, on-site monitoring of ground-borne vibration and noise levels, and the development of vibration impact assessment spreadsheets and Excel macros for generic vibration

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assessments. This project expanded from construction only to peer review of operational design details and ultimately redesigns of building facades, enclosures and noise wall design.

Roads and Maritime Service, Woolgoolga to Ballina Alliance – Sydney, Australia, 2011–2013

Daniel was responsible for undertaking detailed construction assessments (noise and vibration) of the Pacific Highway in the mid north coast and far north coast regions of New South Wales between Woolgoolga and Ballina, as part of a $25 million EIA. The assessment focused on identifying impacts for approximately 2500 identified sensitive receivers along the proposed 150-km upgrade, and outlining mitigation. Owing to the size of this project (currently one of the largest EIAs in the southern hemisphere), and the difficulties involved in data analysis of large datasets and areas, several innovative tools were developed to assist with the project.

MINERALS

Xstrata Coal, facade treatment and low frequency noise – Mangoola, Australia, 2012–2013

Daniel was involved with a two-stage process including acoustic facade treatment assessment and design at residential receivers and an investigation into low-frequency noise emissions at a mine. He performed detailed noise and vibration modelling and fast Fourier transform data analysis, and used computational noise modelling to identify receivers that would be suitable for property treatments and to initially look at mine noise across the area.

Rio Tinto, mine wharf construction – Cape Lambert, Australia, 2013

Daniel was the technical lead for the peer review of vibration monitoring methodology and monitoring data. Following the review he trained the environmental team in basic environmental vibration monitoring and undertook on-site construction monitoring that was required to satisfy ecological concerns. Non-terrestrial piling was being undertaken for a new wharf at the Cape Lambert B Mine and concerns were raised to the impacts on nesting turtles on the closest beaches. Monitoring was undertaken and reports written to provide support for a thesis commissioned on behalf of Rio Tinto to look at the impacts associated with piling generated vibration on the success rates of turtle embryos.

OTHER INTERNATIONAL

Ministry of Defence (MOD), BATUK environmental audit – Kenya, 2013–2014

Daniel was the technical noise lead for feeding into the overall environmental audit for MOD operations in Kenya. The MOD is required to undertake an ESIA for current training activities throughout Kenya. Part of this includes the assessment of impacts of training noise (weapons, aircraft, vehicles and infrastructure) on the surrounding community, in relation to Kenyan and international aviation guidelines. The work involved in-country site surveys, modelling, assessment and interpretation of international guidelines.

Sydney Water, mechanical and electrical maintenance renewals programme – Sydney, Australia, 2012–2013

A noise impact assessment and noise control design were required for upgrades to 12 existing water pump stations across the Sydney region and at the main Sydney waste-water treatment plant at Malabar. Projects included monitoring, computational modelling and assessment to determine the specification of mitigation measures, HVAC systems and impacts on surrounding receivers. Detailed mitigation measures were designed and recommended specifically for each pump station and the waste-water treatment plant.

3

Srinivas Srimath, associate director

Core skills

Air quality and permitting consultancy

Impact assessment studies

Air dispersion modelling

Ambient, occupational and indoor air quality monitoring

Legal/public inquiry support

Planning and permitting support

GHG assessment support

Climate change support

Training

Details

Qualifications

PhD in Air Quality Modelling and Measurement

Chartered Environmentalist

Chartered Scientist

Master of Engineering (Environmental Engineering)

Bachelor of Engineering (Civil Engineering)

NVQ level 4 in Management, Chartered Management Institute, UK

Memberships

Member of the Institution of Environmental Sciences and the Institute of Air Quality Management

Associate Member of the Institute of Environmental Management and Assessment, UK

Other

IEMA Environmental Auditing foundation course

Personal Track Safety training

PROFILE

Srinivas has over 24 years' experience of engineering and environmental projects relating to infrastructure development. He leads the RSK's air quality team and is the company's Head of Profession for air quality.

Srinivas's work experience covers numerous industrial, pipeline and environmental planning related assessments that have sought to minimise the environmental impact of developments and devise suitable environmental improvement plans where necessary. As his experience covers both regulatory enforcement and advice to commercial operators, he has gained valuable experience in identifying what regulators look for in applications to build or operate equipment. This understanding assists in removing the environmental constraints associated with existing developments and projects, and increases the chance of a successful outcome associated with new applications.

Srinivas's expertise includes emission estimation for several industrial and urban pollution sources. His PhD thesis included the monitoring and modelling of air pollutants at local, urban and regional scales. Over two years, he developed an expert air quality assessment system (for urban and highly trafficked areas) for a European Commission-funded project that covers several of Europe's most populous areas where traffic, domestic and industrial activities interrelate. His experience of other modelling systems includes some of the most advanced models available (Models 3-CMAQ, CALPUFF, AERMOD, ADMS-Roads, ADMS5, PC-CREAM 08) and other air dispersion models commonly applied in Europe.

He also provided consultancy services for the design of environmental infrastructure facilities as part of different World Bank and Asian Development Bank aided projects.

Srinivas has specialist skills in the following areas:

- preparation of greenhouse gas inventories
- development of air pollutant emission estimation methodologies
- preparation of environmental statements in support of large pipeline installations and industrial facilities
- detailed air dispersion modelling studies
- design and management of ambient, occupational health and workplace air quality monitoring programmes.

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Key project experience

ENERGY SECTOR

BP, South Caucasus Pipeline Expansion (SCPX) project – Georgia

The scope of air quality work for the SCPX project was to undertake a baseline air quality study at multiple locations along the pipeline route to inform an environmental and social impact assessment. Srinivas provided technical support and reviewed the air dispersion modelling of emissions to air resulting from the operation of gas turbines at pumping stations under various load operating conditions.

Under a separate study commissioned by BP under the SCPX project, Srinivas has assessed the potential local air quality impacts associated with the operation of a waste incineration plant. The study included the estimation of emissions to air resulting from the incineration of various types of wastes and detailed dispersion modelling assessment of emissions and identification of significance of impacts to derive mitigation.

E.ON, Trans Adriatic Pipeline (TAP) – Albania

Srinivas has reviewed the Albanian national ambient air quality standards and emission limits for various combustion sources in relation to the European standards, European Bank for Reconstruction and Development standards, International Finance Corporation (IFC) guidelines and World Health Organization guidelines. The study also included the review of international maritime agreements and MARPOL protocols and set environmental standards for the Trans Adriatic Pipeline (TAP) project.

BG Tunisia, Hannibal and Hasdrubal gas plants

Srinivas visited the gas plants and surrounding communities as an air quality expert to review the air pollution control and measurement systems employed by BG Tunisia. The study covered air quality impacts resulting from the operation of the gas plants and identification of environmental impacts on livestock, agriculture and fishing. Mitigation measures, including improvements to the current air pollution monitoring systems, have been recommended as part of the study.

BP, Western Route Export Pipeline (WREP) – Georgia

Srinivas has estimated emissions to air from de-oiling operations resulting from the operation of temporary nitrogen generation units, compressors, pumping equipment, and associated vehicles and diesel power generator units.

C & L Natural Resources, Gazelle field development project – Ivory Coast

Srinivas is the lead air quality specialist for the Gazelle field development project. The project involved baseline air quality monitoring, detailed air dispersion modelling, assessment of greenhouse gases, and identification of mitigation measures to control the potential impacts of the project on local air quality. The study was undertaken as per IFC guidelines.

Starenergie 2073, combined-cycle gas turbine power plant, Songon-Dagbé, Ivory Coast

Srinivas is the lead air quality specialist for the CCGT power plant project in Songon-Dagbé, Ivory Coast. The project involves baseline air quality monitoring and detailed air dispersion modelling of emissions to air from the operation of 1 GWe power plant under various operating scenarios. The study also involves assessing greenhouse gases and identifying mitigation measures to control the potential impacts of the project on local air quality.

Groupment Berkine, El Merk hydrocarbon plant – Algeria

Srinivas led the air quality team in preparing an atmospheric emissions monitoring plan for this project for the El Merk hydrocarbon plant producing oil, condensate and liquefied petroleum gas products. The project involved preparation of an emissions inventory, identification of emission thresholds,

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review of the existing ambient air quality monitoring programme, and providing recommendations to control impacts on local air quality.

Karachaganak Petroleum Operating BV, Karachaganak field expansion – Kazakhstan

A project for KPO involved impact assessment studies in support of the Karachaganak oil and gas condensate field expansion. The field is one of the largest in the world. Srinivas led the air quality support team for this project and designed emission estimation methodologies for numerous emission sources, including stationary combustion and fugitive emission sources. The air quality assessment involved dispersion modelling using advanced models. The major challenges for this project were data availability and coordinating with different organisations. Srinivas provided the support needed to complete the environment and health impact assessment study and to overcome the environmental challenges posed by this major project monitored by the IFC.

National Grid Grain LNG, Isle of Grain

RSK was commissioned was to support National Grid Grain LNG, one of the leading liquefied natural gas (LNG) storage facilities, in successfully acquiring the regulatory permits to expand its operations in the UK. Srinivas is the project manager and lead air quality specialist for the air quality services provided to this prestigious client. He has designed and managed the air quality impact assessment studies, which involved detailed emissions dispersion modelling, nitrogen and acid deposition monitoring at the surrounding ecologically sensitive sites, and ambient monitoring of key air pollutants released from the LNG installation. The scope included producing multiple impact assessment studies using advanced modelling techniques and sophisticated and automatic monitoring of air pollutant and meteorological parameters.

Srinivas used his broad experience to ensure that a coherent and integrated approach was taken to fully meet the needs of the client, including discussions with the regulatory agency. He is involved in the EU-ETS work assessing carbon credits for this project.

National Grid Electricity Transmission plc (NGET) and Scottish Hydro Electric Transmission Ltd (SHETL), East Coast high-voltage direct current (HVDC) link

The project involves the construction of a HVDC link from Peterhead to north-east England. Srinivas was the lead air quality specialist, and technical reviewer for the project. The project included baseline determination, identification and assessment of potential air quality impacts, consideration of uncertainty and technical difficulties encountered, and identification of mitigation measures.

RWE npower renewables, Triton Knoll offshore wind farm electrical system

Working on the onshore section of the Triton Knoll electrical system EIA, Srinivas is the lead air quality specialist for this project. The project involves consultation with relevant stakeholders; consideration of relevant guidance and legislation; production and the approval of the assessment methodology; consideration and determination of the potential air quality impacts for the construction, operation and decommissioning stages of the project; and recommendation of mitigation measures.

Western Power Distribution, Brechfa Forest 132-kV overhead line connection

The project involves the proposed construction of an overhead 132-kV single-circuit electricity grid connection for three wind farms in the Brechfa Forest area. Srinivas is leading the air quality team to provide air quality support to this project.

Shell Global Solutions, Ras Laffan Industrial City – Qatar

A project for Shell involving impact assessment studies in support of the major petrochemical project development in Ras Laffan Industrial City, Doha, Qatar. Srinivas is leading the air quality team for this project and designed emission estimation methodologies for numerous emission sources, including stationary combustion and fugitive emission sources to meet the international emissions standards and best available techniques. The project also involves the quantification of greenhouse gas emissions, abatement, and ambient air quality monitoring support. The assessment was undertaken as per IFC guidelines.

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Eco & Partner CVs

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Environment, Health, Safety and Quality Management Consultants

Luyima Eddie, In country ESIA Team Leader

Core skills

Environmental and social impact assessment
Project and contract management
Application of IFC, EBRD and other IFI requirements
Due diligence audits of ESIAs
Stakeholder engagement
Environmental and planning consents
Project environmental management systems and monitoring
Ecological survey management

Details

Qualifications

Certificate Quality Management Systems (ISO 9001:2008)
Environmental Impact Assessment (EIA) Training for Oil & Gas Projects
Certificate in ISO 14001 (Environment Management System (Lead Auditor)
Advanced Certificate in Industrial Environment Management
Certificate in Cleaner Production
Certificate in Occupational Health and Safety
Diploma in Environmental Management Galilee Isreal
BA Environmental Management
Msc Enviromental Management, SOAS University of London

Memberships

International Network for Environmental Management (Hamburg Germany)

International Network for Environmental Management (Hamburg, Germany)

Uganda Association for Impact Assessors(UAIA)

PROFILE

Eddie has over 15 years' experience in project management for diverse project including Environment and Social Impact Assessment (ESIA) and Environmental Audits (EA) based on the local legislation and International Best Practice (IFC Standards and World Bank). As a Team Leader, Lead Auditor and Project Manager, he has successifully executed a number of projects.

Eddie is a facilitator for a number of training programs geared at equipping public and private sector organizations in environmental management tools such as environmental management systems (EMS) and cleaner production (CPM). The target audience of the trainings include managers, consultants and Environmental Auditors particularly those employed by the Government and private sector, including small and medium size enterprises (SMEs). He also provides technical expertise in the specialized fields of Corporate Environment, Occupational Health and Safety Management Systems based on (ISO 18001) and ISO 22000 HACCAP.

Eddie has specialist skills in the following areas:

- Cleaner Production,
- Environmental Impact Assessment,
- Environmental Compliance Auditing,
- Environmental Management Auditing, implementation of ISO 14001 and ISO 18001 environmental and occupational health and safety management
- Training and consultancy in the use of environmental management tools such as Environment Management Systems,
- Waste Management,
- Cleaner Production Methods,
- Environmental Impact Assessments managing dispersed, multilingual project teams
- Establishing management practices that minimize pollution while maximizing profit for enterprises.
- Conducting environmental impact assessments; as well as training and equipping public and private sector organizations in environmental management tools such as environmental management systems (EMS)

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Audit for Kinyara Sugar Limited Sugar Mill and Power Co-Generation Plant in Hoima in Western Uganda

Eddie was team leader for an environmental audit of the Kinyara sugar mill and power cogeneration plant (carried out in accordance with Ugandan legislation as well as World Bank Safeguard Policies).

Environmental and Social Impact Assessment for EA-1, EA-1A and EA-2 North Development Project (Phase 1: Scoping) (ongoing)

Eddie was in-country team leader for the ESIA for the EA-1, EA-1A and EA-2 North feld development project – a joint venture between Tullow Uganda Operations Pty Limited and Total E&P Uganda Limited. The proposed project includes construction of 43 well pads, a central processing facility, construction camp, lake water abstraction facility, a network of buried pipelines, a Nile river pipeline crossing and upgraded and new access roads, among others. The ESIA is being undertaken inn partnership with AECOM Uganda Limited.

Environmental Audit for Kakira Sugar Limited Sugar Mill and Power Co-Generation Plant in Jinja in Eastern Uganda

Eddie was the team leader when conducting the routine environmental audit of the KSL sugar mill and power cogeneration plant. This audit was undertaken in accordance with environmental legislation of Uganda.

Environmental Audits of Exploration Area 2 Well Sites in Buliisa and Hoima Districts – Tullow Uganda Operations Pty Limited.

Eddie was the team leader for the completion of 24 environmental audits of exploration and appraisal well sites in Buliisa and Hoima District (Exploration Area 2). These were undertaken in accordance with the environmental legislation of Uganda.

Environmental Audit of Bugungu and Tangi Camps in Buliisa and Nwoya Districts – Total E&P Uganda.

Eddie was the team leader for the completion of an environmental audit of Bugungu Camp (Exploration Area 1) in Buliisa District and Tangi Camp (Exploration Area 1) in Nwoya District, undertaken in accordance with the environmental legislation of Uganda (May 2013).

Environmental Audit of Bidco Uganda Limited in Jinja District – Bidco Uganda Limited.

Eddie was the team leader for the completion of an environmental audit for the Bidco Uganda Limited processing facility in Jinja, undertaken in accordance with the environmental legislation of Uganda (November 2010).

Environmental Audit for Tangi Base Camp located in Gwot-Apwoyo village, Latoro Parish, Nwoya District (Total E & P Uganda)

Coordinate, manage and supervision. This Environmental Audit report assessed the compliance of the operator's activities at the well site with the set out audit criteria, identified non-conformances and recommended appropriate corrective actions, comprehensive consultations with project

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Environment, Health, Safety and Quality Management Consultants

neighbours (community), assessed the compensation process and concerns from the affected communities, assessed waste management practices and
evaluated the extent of restoration recovery.

Environmental Audit for Bugungu Base Camp located in Mvule-1 village, Mvule Parish, Buliisa District (Total E & P Uganda)

Coordinate, manage and supervision. This Environmental Audit report assessed the compliance of the operator's activities at the well site with the set out audit criteria, identified non-conformances and recommended appropriate corrective actions, comprehensive consultations with project neighbours (community), assessed the compensation process and concerns from the affected communities, assessed waste management practices and evaluated the extent of restoration recovery.

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Amos Mafigiri, ESIA Quality Control

Core skills

Environmental and Social Impact Assessment

Environmental Compliance Auditing

EMS Implementation (ISO 14001:2004)

Details

Qualifications

Bachelor of Arts in Environment Management Makerere University Kampala (2005)

Training in Quality Management Systems (ISO 9001:2008) Eco & Partner Consult Limited(2011)

Training in Geographical Information Systems facilitated by David Mfitimukuza, MUIENR(2010)

Certificate course in Fundamentals of Oil and Gas from IBC Global Academy, UK(2011)

Short Course in Environmental and Social Impact Assessment by Nile Basin Initiative/Eco & Partner Consult Limited(2012)

Training in Understanding and Implementation of Environmental Management Systems, ISO 14001:2004 (2014)

Memberships

Uganda Association for Impact Assessors(UAIA)

PROFILE

Amos is a certified environmental practitioner with working experience spanning more than nine years. He currently works as the Manager (Projects) at Eco & Partner Consult Ltd. He has a working knowledge of environmental management systems (EMS), and has developed environmental policies for private sector organizations. He has specialist knowledge and skills in environmental and social impact assessment (ESIA) and environmental compliance auditing, and has over the last seven years, provided technical support in numerous ESIAs and environmental audits particularly in the oil and gas sector.

Amos has specialist skills in the following areas:

- Environmental and Social Impact Assessment
- Environmental Compliance Auditing
- EMS Implementation (ISO14001:2004)
- Noise Assessment
- Air Quality Assessment

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Audit for White Nile Consults Limited, 2016

Coordinated an environmental compliance audit for an oil and gas waste treatment and disposal facility situated in Hoima District (Hohwa Village).

Environmental Audits for Tullow Uganda Operations Pty Limited, 2015

Coordinated environmental compliance audits for an oil and gas waste exploration facilities in Exploration Area 2 South (Buliisa and Hoima): Ngara-1 Waste Consolidation Area, Buliisa Camp, Kigogole-1 well site, Kigogole-3, Kasemene-1, Nsoga-3&4, Kisinja Camp, kisinja Waste Consoldation Area, Ngassa-2, Waraga-2, Waraga-3 and Mbegu borrow pit.

Environmental Audits for CNOOC Uganda Limited, 2015

Provided technical support (evaluation of IFC compliance) for an environmental compliance audit for road development in the Kingfisher Discovery Area in Exploration Area 3A in Buhuka (Hoima District).

Environmental and Social Impact Assessment for the Kyambura Hydroelectric Power Project along River Kyambura in Southwestern Uganda, 2014 – ongoing

Supervised and supported the coordination of ESIA activities including among others: reconnaissance visits, preparation of the scoping report and terms of reference, and quality control for preparation of the ESIS. The project intends to establish a 7.6MW hydropower plant for the supply of electricity to the Ugandan national grid. The ESIA was prepared in accordance with Ugandan environmental legislation and international best practice embedded in the IFC sustainability framework.

Environmental and Social Impact Assessment for Well Pads Geophysical and Geotechnical Surveys (Exploration Area 1) – Total E&P Uganda, 2014

Coordinated ESIA activities for the preparation of a project brief covering geophysical and geotechnical surveys at 28 tentative locations being considered for the establishment of development well pads. Amos led a multi-disciplinary team that included specialists in limnology, hydrogeology, soil science, botany, zoology, archaeology, noise and air quality assessment, and GIS/cartography. Also oversaw the compilation of the final project brief submitted to NEMA.

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014 – ongoing

Supported in country coordination of local ESIA specialists. Under this project, CNOOC was to build a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction includes a total of 40 wells (27production wells and 13 injection wells); and the surface construction include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Environmental and Social Impact Assessment for the proposed Nile Crossing Geotechnical Survey (Exploration Area 1) - Total E&P Uganda, 2013

Coordinated ESIA for a geotechnical survey of the proposed Victoria Nile Crossing project. The aim of the project was to provide recommendations for design and construction regarding the feasibility of undertaking horizontal drilling for a potential oil pipeline. The project scope also include assembly and mobilisation of a self-elevating platform on the Nile River intended to enable geotechnical activities in the Victoria Nile. Specialist studies undertaken during this ESIA included noise and air quality, sociology, archaeology and cultural heritage, hydrology, soil science, limnology, terrestrial fauna (mammals, birds, and reptiles), water quality, and aquatic fauna (fish, benthic macro-invertebrates), and phytoplankton.

Environmental and Social Impact Assessment for Victoria Nile 3D Seismic Coverage (Exploration Area 1) - Total E&P Uganda, 2013

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Environment, Health, Safety and Quality Management Consultants

Coordinated the preparation and submission of a project brief for 3D seismic acquisition in the Lower Victoria Nile. The project also included the establishment of a temporary mooring site along the Victoria Nile. Amos led a multi-disciplinary team that included specialists in aquatic ecology (fish, benthic macro-invertebrates, water quality) terrestrial ecology (botany, ornithology, and zoology), hydrogeology, limnology, air quality and noise assessment, and sociology. The offshore 3D seismic acquisition project was intended to supplement data acquired during the wider East Nile 3D Seismic Survey that a large portion of the Murchison Falls National Park.

Environmental and Social Impact Assessment for Waraga-D Appraisal Drilling (Exploration Area 2)– Tullow Uganda Operations Pty Limited.

Led a multi-disciplinary team in the preparation of a project brief for drilling of the Waraga-D appraisal well in EA-2 South in Hoima District. Specialist studies included hydrogeology, zoology, hydrology, water quality, soil physico-chemical characteristics, botany, ornithology, noise and air quality, and sociology.

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Frank Lugemwa, Socio-economist



PROFILE

Frank is a registered and certified environmental practitioner with National Environment Management Authority (NEMA) in Uganda. He has been a team member as a socio-economist on a number of projects ranging from telecommunications, manufacturing, road sector, petroleum supply to oil and gas exploration , appraisal and production. He is a qualified social scientist and holds a Masters degree in Landuse Planning and Regional Development and Post Graduate Diploma in Environmental and Social Impact Assessment (ESIA) of Makerere University. He is currently pursuing a Masters degree in Sociology.

Core skills

Social-economic impact assessment

Stakeholder Engagement

Intergrating Social Safeguards in development projects

Socio economic data collection and analysis

Environmental Audits

Presentation of data using Microsoft Office 2010

Software packages including SPSS, GISand remote sensing packages

Details

Qualifications

Certificate in Planning for Effective Public Participation (International Association for Public Participation-iap²), Midrand, South Africa, 2015.

The World Bank Workshop in Environmental and Social Impact Assessment in African Oil and Gas Producing Countries – Petroleum Governance Initiative, Capetown, South Africa, 2013.

Certificate in Quality Management Systems (ISO 9001:2008)

Certificate in in Geographical Information Systems

Post Graduate Diploma in Environmental Impact Assessment, Makerere University Kampala (MUK), Uganda, 2005.

Masters of Sociology (Candidate), MUK, 2014-present

Master of Arts in Land use Planning and Regional Development, MUK, 2013

Bachelor of Arts (Hons) MUK, 1999

Memberships

Uganda Association for Impact Assessors (UAIA)

Frank has specialist skills in the following areas:

- Socio-economic impact assessment of projects ranging from medium to large scale enterprises
- Environment & Social impact assessment of donour-funded projects such as World Bank (IFC)
- Socio economic data collection, analysis and report write ups.
- Environmental Audits for a number of projects ranging from medium to large scale enterprises
- Conducting stakeholder engagements including Key Informant Interviews (KIIs), Focus Group Discussions(FGDs) and Public meetings for a range of projects.

He has been a socio-economist and Lead, Stakeholder engagement on a number of projects including:

- Environmental and Social Impact Assessment for the proposed Kingfisher Field Development (Exploration Area 3A) for China National Offshore Oil Company (CNOOC) in Uganda.
- Environmental and Social Impact Assessment for Exploration Area (EA) EA-1/EA-1A and EA-2 North Development Project (Total E & P Uganda and Tullow) in Uganda.
- Environmental and Social Impact Assessment for the Mini hydropower dam along River Kyambura in Western Uganda.
- Environmental and Social Impact Assessment for the Jobi E Exploration Drilling (Total E & P Uganda).
- Environmental and Social Impact Assessment for Ngiri F Exploration Drilling (Total E & P Uganda).
- Environmental and Social Impact Assessment for Jobi E Exploration Drilling (Total E & P Uganda).
- Environmental and Social Audit for a 3D Seismic Survey in the Jobi-Rii Field area (Block 1), Nwoya District for Tullow Uganda Operations Pty Limited.
- Environmental and Social Impact Assessment for Bbegeri-C Exploration Drilling (Tullow Uganda Limited).
- Environmental and Social Impact Assessment for Jobi Field Appraisal (Tullow Uganda Limited).
- Environmental and Social Impact Assessment for Ngiri Field Appraisal (Tullow Uganda Limited)
- Environmental and Social Impact Assessment for Kasemene-Ngiri 3D Seismic Survey (Tullow Uganda Operations Pty Ltd)
- Environmental and Social Impact Assessment for Ngiri Field Appraisal (Tullow Uganda Limited)

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Selected recent project experience

Environmental Baseline Study for the Proposed North Development Project in EA-1/EA-1A and EA-2 - Total E&P Uganda and Tullow Uganda Operations Pty, 2015 – Ongoing

Lead in Stakeholder engagement for the North Development Project Environmental and Social Impact Assessment (ESIA-Scoping Phase). His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking, collaboration with the international consultant in the preparation and coordination of the Stakeholder Engagement Plan (SEP). The project was benchmarked on International Finance Corporation (IFC) Performance Standards. Under this project, developer will construct a range of facilities that will include development and production infrastructure as well as supporting infrastructure to achieve the production of crude oil in parts of Western and Northern Uganda. The subsurface construction will include a total of 41 wells (11 North of Victoria Nile and 30 south of the Nile); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, upgrade of access roads and airstrips among others.

Environmental Baseline Study for the Proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014 – Ongoing

Lead in Stakeholder engagement and socio-economic assessment for the Kingfisher Field Development ESIA. His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking, collaboration with the international consultant in preparation, coordination of the Stakeholder Engagement Plan (SEP). Additionally, he participated in the social survey that was undertaked in Buhuka Flats. The project was benchmarked on International Finance Corporation (IFC) Performance Standards. Under this project, CNOOC will construct a range of oil producing and development infrastructure as well as supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Environmental Baseline Study for the Proposed Kyambura Mini Hydropower Plant – Ziba Uganda, 2014

Lead in Stakeholder engagement and social assessment for the proposed Kyambura Mini Hydropower Plant. The purpose of the project is to generate electric power for transmission to the national grid. The project was benchmarked on International Finance Corporation (IFC) Performance Standards. His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking and preparation, coordination of the Stakeholder Engagement Plan (SEP). Additionally, he was part of the team that conducted a socio-economic survey in the directely affected areas. The proposed plant will include several structures to be located along a 3km stretch of the river's course including a dam and intake, a water tunnel, a forebay, a penstock, a power house and tailrace.

Environmental Audit for the Escarpment Road to Kingfisher Development Area (Exploration area 3A) – CNOOC Uganda, 2015

Lead in Stakeholder engagement and social audits for the escarpment road to Kingfisher Field Development. His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking and conducting an assessment on the level of compliance with the social safeguards as per the International Finance Corporation (IFC) Performance Standards. Assessment of the labour and working conditions, compensation for the project affected persons and vulnerable groups was undertaken.

Environmental Baseline Study for the Infield Roads in the Kingfisher Development Area – CNOOC Uganda, 2014

Lead in Stakeholder engagement and socio-economic assessment for the infield roads ESIA in the Kingfisher Field Development Area. His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking and preparation of a Stakeholder Engagement Plan (SEP). The project was benchmarked on International Finance Corporation (IFC) Performance Standards. Additionally, he participated in the social assessment that was undertaked in Buhuka Flats for the infield roads. This environmental impact study examined the impacts that were likely to result from the construction of access roads to oil and gas facilities in the Kingfisher discovery area, particularly the internal road network (infield roads) situated in the Albertine rift valley flat.

Environmental Social Action Plan (ESAP) Kakira Sugar Works–Uganda, 2015

Lead in Stakeholder engagement and social assesment for the ESAP for Kakira Sugar Works. In July 2013, the GET FIT Investment Committee (IC) approved financing for the KSL bagasse co-generation expansion (30 MW) during the IC meeting. GET FIT has approved tariff support for Kakira to supply additional 20 MW to the national grid. The Project was approved with Conditions Precedent (CPs) regarding completion of an Environmental and Social Action Plan (ESAP). His responsibilities included organising meetings at local levels with lead agencies, organising logistics, minute taking and conducting an assessment on the level of compliance with the social safeguards as per the International Finance Corporation (IFC) Performance Standards. Assessment of the labour and working conditions, compensation for the project affected persons and vulnerable groups was undertaken.

ESIA for Well Pads Geophysical and Geotechnical Surveys (EA-1), Total E&P Uganda, 2014

Coordinated stakeholder consultation process for the Well Pads Geophysical and Geotechnical Survey ESIA (Buliisa and Nwoya Districts).

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura, 2014

Frank is coordinated the Baseline Data collection for the Socio-economic assessment of this project. The project will produce 7.6MW of electricity for supply to the National Grid.

Project Brief for the proposed Nile 3D Seismic Coverage (EA-1) Total E & P Uganda, 2013

Frank was the Lead Socio-economist/Stakeholder enagament for this project. His roles included collection of socio-economic data and conducting stakeholder enagemenrnt.

Environmental and Social Impact Assessment for the proposed Nile Crossing Geotechnical Survey (Exploration Area 1) - Total E&P Uganda, 2013

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Frank was the Lead Socio-economist/Stakeholder enagament for this project. The aim of the project was to provide recommendations for design and construction regarding the feasibility of undertaking horizontal drilling for a potential oil pipeline.

Project Brief for Rii-B Appraisal Drilling (EA-1), Total E&P Uganda, 2013

Stakeholder consultation lead for the ESIA for the Rii-B appraisal well drilling project situated in the Murchison Falls National Park.

Environmental and Social Impact Assessment for Nyamasoga Waste Management Facility, EnviroServ Uganda Limited, 2013

Led the stakeholder consultation process for the ESIA for the Nyamasoga waste management facility in Nyamasoga in Buseruka Sub-County, Hoima District.

Environmental and Social Impact Assessment for Waraga-D appraisal drilling (EA-2), Tullow Uganda Operations Pty Ltd, 2013

Served as stakeholder lead consultation lead for ESIA stakeholder consultation for the Waraga-D appraisal well drilling situated in Kiryamboga (EA-2 South) in Buseruka Sub-County, Hoima District.

ESIA for expansion of Kisinja Waste Consolidation Facility (EA-2) ,Tullow Uganda Operations Pty Limited, 2013

Coordinated stakeholder consultation for Kisinja Waste Consolidation Area Expansion ESIA situated in Kaiso, Buseruka Sub-County (Hoima District).

ESIA for Temporary Storage of Crude and Mixram at Ngiri-2 (EA-1)Total E&P Uganda, 2012

Stakeholder consultation lead for ESIA (Project Brief) covering road transportation of crude from North Nile well sites (Nwoya District) to Ngiri-2 well site in Buliisa (South Nile).

ESIA for Expansion of Adundu Camp (Total E&P Uganda)

Stakeholder consultation lead for ESIA (Project Brief) for the expansion of the approved Adundu Camp situated in Nebbi District.

ESIA for Jobi-E appraisal Drilling (EA-1), Total E&P Uganda, 2012

Stakeholder consultation lead for ESIA (Project Brief) for the Jobi-E Appraisal Well Drilling project situated in Murchison Falls National Park in Nwoya District.

ESIA for Nsoga H & I appraisal drilling (EA-2) Tullow Uganda Operations Pty Limited, 2012

Stakeholder consultation lead for ESIA for the Nsoga-H&I appraisal well drilling situated in in Kibambura, Ngwedo Sub-County, Buliisa District.

ESIA for the proposed Jobi-Rii Field Appraisal (EA-1) Tullow Uganda Limited, 2011

Stakeholder consultation lead for ESIA of Jobi-Rii Field Appraisal Drilling in Murchison Falls National Park, Nwoya District. The ESIA covered several well sites within the Jobi-Rii field.

ESIA for Ngiri-F appraisal drilling (EA-1), Tullow Uganda Limited, 2011

Stakeholder consultation lead for ESIA (Project Brief) for the Ngiri-F Appraisal well drilling project situated in northern Buliisa District.

ESIA for Kigogole-I appraisal drilling (EA-2), Tullow Uganda Operations Pty Limited, 2011

In-charge stakeholder consultation for Kigogole-I appraisal drilling ESIA for appraisal activities in the Kigogole Field, Buliisa District.

ESIA for Ngiri Field appraisal drilling, Buliisa District (EA-2) Tullow Uganda Ltd, 2010

Stakeholder consultation lead for the Kigogole Field Appraisal ESIA – a multi-site ESIA for appraisal well sites in Buliisa District.

ESIA for Nsoga Field appraisal drilling, Buliisa District (EA-2) Tullow Uganda Operations Pty Limited, 2010

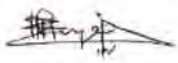
Stakeholder consultation lead for the Nsoga Field Appraisal ESIA – a multi-site ESIA for appraisal well sites in the Nsoga Field, Buliisa District.

ESIA for Kigogole Field appraisal drilling, Buliisa District (EA-2) Tullow Uganda Operations Pty Limited, 2010

Stakeholder consultation lead for the Kigogole Field Appraisal ESIA – a multi-site ESIA for appraisal well sites in the Kigogole Field, Buliisa District.

Declaration

I, the undersigned, certify to the best of my knowledge that this data correctly describes my qualifications and experience.



22/04/16

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CURRICULUM VITAE

ALEX MUKASA
P.O.Box 102, Entebbe
Mobile: +256 772646680/702665901
Email: dr.alexmukasa@gmail.com

PERSONAL PROFILE

PROFESSION: VETERINARY DOCTOR
NATIONALITY: UGANDAN
MARITAL STATUS: MARRIED
DATE OF BIRTH: 09TH MAY, 1973

KEY QUALIFICATION AND EXPERTISE

Alex Mukasa is a Veterinary surgeon with a strong background in Animal health and rural Agricultural extension. He has strength in working with rural communities and has demonstrated productive work of up to 11 years in extension work with local government. He has also demonstrated success in farmer mobilization and collection of agricultural related data. Alex is self-motivated, hardworking and result orientated person who seeks out to handle new challenges that enhance carrier growth.

ACADEMIC QUALIFICATIONS

YEAR	QUALIFICATION	INSTITUTION
2008- (Dissertation submitted)	Masters in Livestock Development Planning and Management (Funded by Ministry of Agriculture)	Makerere University, Kampala
1995-2000	Bachelor of Veterinary Medicine (BVM)	Makerere University, Kampala
1994 - 1995	Uganda Advanced Certificate of Education (UACE)	St. Francis SS, Kampala
1992-1994	Uganda Advanced Certificate of Education (UACE)	St. Henrys' College Kitovu, Masaka
1988-1991	Uganda Certificate of Education (UCE)	Light College Katikamu, Wakiso

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SHORT COURSES ATTENDED AND AWARDS

YEAR	AWARD	INSTITUTION
2012	Certificate in Dairy and Meat Processing Technology	Egyptian International Centre for Agriculture (EICA). Cairo, Egypt
2012	Certificate in Infectious Animal Diseases Data Management	African Management Development Institute (AMADI). Swaziland
2013	Certificate in Livestock Development Policies	National Livestock Breeding Centre (NLBC). Fukushima, Japan
2013	Sanitary, Phyto-sanitory and Risk Analysis Modelling	Tuskegee University, USA
2015	Dairy Production Economics	African Institute for Advanced Training (AIAT). Pretoria, South Africa

PROFESSIONAL EXPERIENCE

DURATION	EMPLOYER & LOCATION	POSITION HELD	RESPONSIBILITY
2011- to date	Ministry of Agriculture, Animal Industry and Fisheries, P.O. Box 102, Entebbe	Senior Veterinary Officer in charge dairy production	Providing technical advice on increased quantity and quality of milk production in the country
2010 - 2011	Sheema District Local Government	Acting District Veterinary Officer	Planning for and supervising delivery of Veterinary services in the entire district
2005-2010	Bushenyi District Local Government, Bushenyi District	Sub-county NAADS coordinator	Developing Work plans and budgets for the delivery of extension and technology services to farmers' groups, monitoring and evaluation of program activities and progress reporting
2000-2005	Bushenyi District Local Government, Bushenyi District	Veterinary officer	Training livestock farmers on improved livestock production practices, prevention and control of animal diseases, treating sick animals among others

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OTHER RESPONSIBILITIES HELD

YEAR	LOCATION	RESPONSIBILITY
2013 - 2015	Ministry of Agriculture, Animal Industry and Fisheries	Focal person for the Eastern Africa Agricultural Productivity Project in the Department Of Animal Production and Marketing
2008	Bushenyi District Local Government	Supervised National livestock census in Bugongi Sub-county Local Government
2006	Bushenyi District Local Government	Collected baseline data on banana production in preparation for the construction of the banana processing factory under Presidential Initiative for Banana Industrial Development (PIBID) project
2002	Bushenyi District Local Government	Supervised housing and human census with agricultural module in Mutara Sub-county Local Government

LANGUAGE AND COMPUTER COMPTENCES

LANGUAGES SPOKEN: English-fluent, Luganda –fluent, Runyakitara - Good

COMPUTER COMPETENCE:

a) Ms Word, Ms Excel /Spread sheets, Ms Power Point
b) SPSS

PROFESSIONAL AFFILIATIONS:

- Member of Uganda Veterinary Association (UVA)
- Registered with Uganda Veterinary Board (UVB)

FELLOWSHIPS AND AWARDS:

June 2008 –Ministry of Agriculture, Animal Industry and Fisheries – Award to Undertake Post graduate training- MSc

REFEREES

Dr. Sylvia Nalubwama Muwanga
Lecturer
College of Veterinary Medicine Animal Resources and Biosecurity
P.O.Box 7062, Kampala
Mobile: +256 782 552706
Email: drnalubwama@gmail.com, smnalubwama@covab.mak.ac.ug

Mr. Maholo Denis Mulongo
Senior Pasture Agronomist
Ministry of Agriculture, Animal Industry and Fisheries
P.O. Box 102, Entebbe Uganda
Tel. +256 772 685937
Email: denis.mulongo.maholo@gmail.com

3

DAUDA WAISWA BATEGA (PHD) CURRICULUM VITAE

Proposed Position: .....

Profession: Sociologist

Name of Staff: **Dauda Waiswa Batega**

Specialty: Sociology of Rural Development Planning, Governance and Management Systems, Environment and Natural Resources Planning and Management, Project Planning and Management

Date of Birth: June 12, 1969

Nationality: Ugandan

Education: PhD Sociology Makerere University, 2013.
MA (Sociology) Makerere University Kampala, 1999
BA (Social Sciences) Makerere University Kampala, 1992.

Address: Department of Sociology and Anthropology-Makerere University-Kampala
dwbatega@chuss.mak.ac.ug
dwbatega2000@yahoo.co.uk

Membership of Professional Associations:

F ASU (Fellow of the National Association of Sociologists of Uganda)

Other Education

2000: Pedagogical skills in University Teaching, Supervising and Examination-Faculty of Education, Makerere University, Kampala, Uganda.

1997: Focus Group Research Methodology in Health Research: (DISH project-USAID).

1997: Gender Focused Research Methodology, Department of Women and Gender Studies, Makerere University, Kampala, Uganda.

Country of Experience

Uganda (1993-2016), Rwanda (1996-2000), Kenya (2016), Ethiopia (2016), Switzerland (2003-2004) and Norway (2016).

LANGUAGES:

Language	Speaking	Writing	Reading
English	Excellent	Excellent	Excellent
Lusoga	Excellent	Excellent	Excellent
Luganda	Excellent	Excellent	Excellent
Swahili	Fair	Fair	Fair

EMPLOYMENT RECORD:

2002 – 2015: Managing Partner-Consulting and Development Int Ltd, Kampala Uganda.

1993 – To-date: Lecturer-Department of Sociology, Makerere University Kampala (Research Methods and Statistics, Governance and Rural Development Planning, Sociological Theory, Environmental Planning and Management).

1995 - 2001: Visiting Lecturer - National University of Rwanda-Butare, Faculty of Social Sciences Economics and Mgt.

2015: Guest Academic Fellow-University of Nairobi-School of Natural and Biological Sciences-Department of Metrology, WaSO Project

2016: Guest Academic Fellow-Addis Ababa University –Faculty of Social Sciences, Department of Political Sciences and Public Administration, WaSO Project

2016: Guest Academic Fellow-Bergen University, Uni-Global Department, WaSO Project

1995-2016: Consultant (Various Assignments) as illustrated below

WORK UNDERTAKEN THAT BEST ILLUSTRATES CAPABILITY

1. **Name of the Project**: Katosi-Kampala Transmission Water Mains Project (Package 4B) Under National Water and Sewerage Corporation Lake Victoria Water and Sanitation Project.
   Position Held: RAP Specialist and Team Leader:
   Period: June 2016-Dec 2016.
   Main Features of the Project: Preparation of Resettlement Action Plan (RAP) for Katosi-Kampala Transmission Water Mains Project (Package 4B): Community Engagement/Mobilisation, Identification and Census of Project Affected Persons, Valuation of Affected Property and Interests and Preparation for Resettlement Action Plan (RAPs) and Supervision for RAP Implementation
2. **Name of the Project**: Katosi-Kampala Transmission Water Mains Project (Package 4B) Under National Water and Sewerage Corporation Lake Victoria Water and Sanitation Project. Preparation of Environmental and Social Impact Assessment (ESIA) for Katosi-Kampala Transmission Water Mains Project (Package 4B).
   Position Held: Sociologist:
   Period: March 2015-June 2016.
   Main Features of the Project Community Engagement/Mobilisation, Preparation of Environmental and Social Impact Assessment Plan (ESIA) for for Katosi-Kampala Transmission Water Mains Project (Package 4B):
3. **Name of the Project**: Kampala/Kibuye-Busega-Mpigi (KBM) Express Highway-UNRA Project:
   Position Held: RAP Specialist and Team Leader:
   Period: March 2015-June 2016.
   Main Features of the Project: Preparation of Resettlement Action Plan (RAP) for Kampala/Kibuye-Busega-Mpigi (KBM) Express Highway: Community

Engagement/Mobilisation, Identification and Census of Project Affected Persons, Valuation of Affected Property and Interests and Preparation for Resettlement Action Plan (RAPs) and Supervision for RAP Implementation

4. **Name of the Project**: Kampala/Kibuye-Busega-Mpigi (KBM) Express Highway-UNRA
   Position Held: Sociologist:
   Period: March 2015-June 2016.
   Main Features of the Project Community Engagement/Mobilisation, Preparation of Environmental and Social Impact Assessment Plan (ESIA) for Kampala/Kibuye-Busega-Mpigi (KBM) Express Highway-UNRA Project
5. **Name of the Project**: UNDP/NAMA Integrated Waste Management (IWM) and Bio-Gas Project (PIF) Uganda 2016
   Position Held: Social and Gender Expert:
   Period: March 2016-Oct 2016.
   Main Features of the Project: Stakeholder engagement and consultation, project gender baseline, analysis and integration, feedback and final preparation of Project Implementation Framework (PIF) Documents in collaboration with Eco Consult (UK).
6. **Name of the Project**: Resettlement Action Plan (RAP) for the proposed Sindila and Ndugutu Small Hydro Power Projects in Bundibugyo Project:
   Position Held: RAP Specialist and Team Leader:
   Period: March 2015-June 2016.
   Main Features of the Project: Preparation of Resettlement Action Plan (RAP) for Kampala/Kibuye-Busega-Mpigi (KBM) Express Highway: Community Engagement/Mobilisation, Identification and Census of Project Affected Persons, Valuation of Affected Property and Interests and Preparation for Resettlement Action Plan (RAPs) and Supervision for RAP Implementation
7. **Name of the Project**: Ecosystems Services Assessment for Oil and Gas Development in the Albertine Region Sub-contracted by Worley Parsons (UK) in association with Consulting and Development International (CDI) -Uganda on behalf of Tullow Oil (Uganda) and Partners
   Position Held: Sociologist:
   Period: August 2014-November 2015:
8. **Main Features of the Project**: Stakeholder engagement and consultation through expert panels and focus group discussions, ecosystems services Identification and analysis and development of methodology for future assessment, feedback and final report preparation.
9. **Name of the Project**: Feasibility Study and Detailed Engineering Designs Of Kibbale, Namayingo, Mutufu And Binyiny Town Councils under Lot 3: Piped Water Supply and Sanitation Systems: Ministry Of Water and Environment-Water and Sanitation Development Facility-Eastern Towns: In Association With Ark Consulting (Contract Ref No. Mwe/Wsdf-E/Srvcs/13-14/00018/Lot3).
   Position Held: Socio-Economist:
   Period: August 2014-July 2015:

Main Features of the Project: Baseline Household Survey on water Use and Demand, Demand and Ability to Pay analysis, Potential Impacts and Monitoring Indicators.

10. **Name of the Project**: Building Resilience to Climate Change in the Water and Sanitation Sector: Uganda 2014 Project: Preparation of Project Implementation Framework (PIF) Documents. Client: Eco Consult (UK) Ltd & UNEP RISOE.
    Position Held: Social and Gender Expert:
    Period: May-June 2015.
    Main Features of the Project: Implementation Framework (PIF) Documents in collaboration with Eco Consult (UK) for UNDP/GEF.

11. **Name of the Project**: Consultant-Institutional Analysis Expert for the Feasibility and Institutional Analysis for Organic Waste Streams Recovery, Recycle and Reuse activities in Kampala. Funded by International Water Management Institute- Sri Lanka. Client: International Water Management Institute- Sri Lanka.
    Position Held: Socio-Economist:
    Period: Feb-April 2014.
    Main Features of the Project: Stakeholder engagement and consultation, project stakeholder identification and analysis, business models institutional analysis for success and related challenges, feedback and final report preparation.
12. **Name of the Project**: Evaluation of Community Implementation for the Home Based Management of Fever/Malaria (HBM) Strategy in Uganda (MoH/BASICS II/USAID Uganda), 2004.
    Position Held: **Project**Consultant/Team Leader
    Period: Feb-April 2004.

    Main Features of the Project: Review of project interventions/components, outputs and outcomes, project stakeholder and beneficiary engagement and consultation, project impacts identification and analysis and related challenges, feedback and final report preparation

OTHER CONSULTANCIES THAT DEMONSTRATE COMPTENCE

13. Sociologist/ Socio-economist for the Transport Poverty Observations Survey for Upgrading of Kamwenge-Forportal Road to Bitumen Standards. Commissioned by Uganda National Authority Contract to JBG/GAUFF Uganda-Germany. Sept- Dec 2013.

14. Consultant/Sociologist: Social: Economic Baseline Survey for The Design and Implementation of Arua Emergency Water and Sanitation Project for Arua Municipality (commissioned by: National Water and Sewerage Corporation and JBG/GAUFF/ Consulting Eng/World Bank-U-Ltd June 2011.
15. Consultant: Policy Analyst for Water Sanitation Technology Options for the Urban Poor Project in Naivasha-Kenya and Masaka-Uganda. 2009/2010. Institute of Environment and Water/East African Wildlife Society-Nairobi/CIDA 2008/2010.
16. Princ.Inv (PhD Thesis): Water Pollution, Social Construction of Risk and Household Burden of Disease in Urban Areas in Uganda. The Case Study of water Use and Abatement Measures in Nakawa and Makindye Division-Kampala City, 2006/2010.

17. Team member, for the preparation of a Project Brief for Total Exploration and Production Uganda's planned Geophysical and Geotechnical surveys in EA1, Uganda. June 2013 – September 2013.
18. 2013: Sociologist/RAP Specialist: Nyagaka III Small Hydropower Project: Update of ESIA and Resettlement Action Plan (RAP) preparation, Zombo District for UEGCL. executed by Atacama Consulting-Uganda
19. July 2013: Sociologist: Consultant/Sociologist Project Brief (PB) for the proposed geophysical and geotechnical surveys in Ngwedo sub-county, Buliisa District, Uganda, by Total E&P (U) Ltd. Executed by Atacama Consulting Contract for: Total E & P (U) Ltd
20. August 2013: Consultant-Socioeconomist: Reconnaissance and Prefeasibility (Socio-Economic) Study of Proposed Small Hydro Power Project Sites in Hoima, Forportal, Bundibugyo, Kabale, Mbarara, Rukungiri, Bushenyi, Mitooma and Kisoro Districts: Employer: Royal Haskoning DHV-ORIO mini hydro power project in Western Uganda in partnership with BATUER Engineering and UECCC-Uganda.
21. Sept- October 2013: Consultant: Transport Poverty Observations Survey for Upgrading of Kamwenge-Forportal Road to Bitumen Standards. Commissioned by Uganda National Authority Contract to JBG/GAUFF Uganda-Germany. Feb-April 2014: Consultant-Feasibility and Institutional Analysis for Organic Waste Streams Recovery, Recycle and Reuse activities in Kampala. Funded by International Water Management Institute- Sri Lanka.
22. ESIA Team member for a Proposed Appraisal Drilling: Mpyo Field (south area): Mpyo-L, Mpyo-M and Mpyo-D; Jobi East Field: Jobi East-F, Jobi East-G and Jobi East-I; Gunya Field: Gunya-B, Gunya-C and Gunya-E. Client; Total E&P Uganda. December 2012 to February 2013.
23. Consultant: Baseline Survey for: Promoting Civic And Political Participation Of Women and Youth in the Informal Sector in Iganga, Kaliro, Bugiri, Dokolo and Amolatar Districts of Uganda Project. UNDP; June-December 2010. Civil and Political Participation of Informal Sector Workers in Uganda Project.
24. Consultant: Uganda 2010-2011Survey (TPO Baseline) for upgrading Fortportal-Bundibugyo/Lamia Road to Bitumen Standards. UNRA/GAUFF Consulting Eng-U-Ltd/SICCO; Jan-April 2010
25. Consultant: Uganda Participatory Poverty Appraisal Project. Ministry of Finance and Economic Planning and Development October 2011.
26. Consultant: Documentation of Discrimination faced by Persons with Disabilities in the Employment Sector in Uganda. International Republican Institute IRI/PLA-Uganda Sept/Nov, 2009.
27. Consultant: Situation Analysis of Challenges Faced by Pensioners in Accessing Pension Services from the Public Pensions Sub-Sector in Uganda: Iganga, Arua and Kampala districts. PLA/Social Security Coalition/MSO Kampala, 2009.
28. Consultant: Situational Analysis of Project Affected Persons (PAP) and Vulnerable households affected by Bujagali Energy (Hydro Power) Project. Jinja/Mukono District March, 2008: BEL Consortium/GoU.
29. Consultant: Rapid Assessment on Working conditions, Knowledge and Practices about HIV/AIDS among Informal Sector Workers in Iganga district, Uganda (AJWS/PLA).
30. Consultant: Rights to the City Initiatives: Assessment of Safety and Security Access profile among the Urban Poor in Kampala slums (Action Aid Uganda April), 2008.
31. Consultant: Reproductive Health Survey among Adolescents in Iganga district (UMSC/IIHC/TDH), 2008/2009.

32. Princ Inv: Scaling up Access to Anti-Malarial Drugs among the Poor through the Private Sector in Rural Uganda-Nakasongola District. Support from WHO/TDR/MIM Geneva 2005/2008.
33. Co. PI Urban Home Management of Fever in Uganda: Strategies for Strengthening Accessibility and Affordability to Anti-malarials under HMM in Urban areas in Uganda. Masindi Town Council study area. Masindi District. Support from WHO/TDR Geneva 2005-2010.
34. Sociologist: Scoping Study for Designing a Management System and Development Strategy for Communities around Rivers-Malakisi, Sio, Malaba Cross Boarder Water Basin in Kenya and Uganda (WREM/World Bank/GoU/GoK), 2006/2007.
35. Co-PI: Operations Research for Enhancing Access to VCT Services among Adolescents in Fishing Communities in Kasensero, Rakai district Uganda (SOMA-Net/Sida/SAREC), 2005/2007.
36. Consultant: Survey on Working Conditions of Female Workers in Agro-processing sector in Kampala and Wakiso district-Uganda (AJWS/PLA-Uganda), 2007.
37. Consultant: Survey on Working Conditions of Adult Domestic Workers in Kampala, Iganga, Mbarara and Lira districts of Uganda (FORD foundation/PLA-Uganda), 2007.
38. Consultant: Baseline Qualitative Study for Scaling up Accessibility to ARTs/ARVs among The Urban Poor in Kampala (Action Aid-Uganda Office), 2006/2007.
39. Consultant: Working Conditions, Knowledge, Perceptions and Practices about HIV/AIDS among Informal Sector Workers in Kampala and Wakiso district, Uganda (ILO/PLA May-Sept 2005).
40. Consultant: Documentation of Best Practices on Home Based Management of Fever/Malaria Strategy in Uganda. WHO/Geneva Office 2004 Dec/March 2005.
41. Principle Investigator: Decentralization and Malaria Control in Uganda: Assessing Human Resource Management Challenges in Bugiri and Tororo district. Funding form WHO/AHPHSR Geneva 2003/2004
42. Sociologist: Feasibility Study and Resettlement/Compensation Plan/Social and Environmental Impact Assessment for upgrading of Soroti-Lira road to Bitumen standard-(RAFU) thru: Gauff /JBG/UNRA Uganda/2004/2003
43. Consultant: Rapid Appraisal of Child Domestic Workers Situation in Uganda; Tororo, Lira, Rakai (ILO/PLA Project-Min Gender Labor and Social welfare, 2002/2003.
44. Sociologist: Team Leader Community consultations for Developing Land Sector Strategic Plan 2002-2007 for Min. of Water Land & Environment, Uganda, 2001/2002.
45. Principle Inv (M.A Thesis): Decentralization and Challenges of Primary Health Care in Tororo, Uganda, 1998-1999.

CERTIFICATION:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describes me, my qualifications and my experience.

10th October, 2016

CURRICULUM VITAE: STEPHEN ODONG

PERSONAL INFORMATION
Address: Plot No. 11, Hill Road, P.O. Box 541, Entebbe, Uganda.
Tel +256 752 750 669, +256 772 750669.
E-mail: steveaustinstephen@yahoo.co.uk; odongaustin@gmail.com.

Nationality: Ugandan
Date of birth: 25 March 1980
Marital status: Married

LANGUAGES

	English	Kiswahili	Luganda
Reading skills	Excellent	Basic	Good
Writing skills	Excellent	Basic	Basic
Verbal skills	Excellent	Good	Good

KEY COMPETENCIES

- Solid knowledge in international human rights and UN human rights mechanism
- Solid knowledge on human rights issues in the extractive industry
- Solid knowledge and experience in monitoring, documenting and reporting human rights violations
- Solid experience conducting surveys, evaluation and research as well as community mobilization

EDUCATION AND TRAINING

2002-2003, Law Development Centre, Kampala- Uganda, Postgraduate Diploma in Legal Practice (Bar Course)
1998- 2002, Uganda Christian University, Mukono- Uganda, Bachelor of Laws (LLB Hons)
1996- 1998, Sir Tito Winyi Senior Secondary School, Hoima- Uganda, Uganda Advanced Certificate of Education

WORK EXPERIENCE

January 2013- to date, Human Rights Network-Uganda, Programmes Manager
Main activities and responsibilities:

- Network and establish strategic partnerships with member organisations, other institutions, CSOs and development partners;
- Manage the programme's budget on behalf of the Chief Executive Officer, monitoring the expenditures and costs against delivered and realized outcomes as the programmes progresses;
- Manage and support existing projects and partnerships, screen and motivate project proposals;
- Support and ensure M&E is mainstreamed in all programmes
- Organise and participate in conferences and advocacy/lobby events;
- Provide analysis and advice on relevant social and political trends in the country;
- Conceptualize new projects and publications;
- Manage both the dependencies and the interfaces between projects;
- Manage the risks to the programme's successful outcome;
- Be responsible for the quality assurance and overall integrity of the programme. Build, manage and motivate the Programme team.

August 2010- December 2012, Law Development Centre Legal Aid Clinic, Kampala, Senior Legal Officer

- Offer strategic direction and guidance to the activities of the Clinic
- Development of projects, and work plans,
- coordination and implementation of the Conciliation project under the case backlog scheme,

- Representing juvenile/adult offenders in courts of law and assisting children in need of care, maintenance and protection,
- Community outreach programmes on diversion of juvenile offenders at community level and restorative justice,
- General awareness on UN Convention on the Rights of the Child and the Ugandan Children's Act Cap 59

May - June 2010, Legal Aid Service Providers Network, Legal Advisor
Offer technical support and guidance in the establishment and operationalisation of the network;

- Registration of network
- Development of strategic plan and guide
- Development of data collection tool and analysis
- Development of polices
- Follow up of riot cases
- Prepare progress reports and accountabilities

June 2008- December 2009, Save the Children in Uganda, Project Manager- Human Rights

- Programme support.
- Partnership development and support.
- Technical support.
- Planning, budgeting and financial management.
- Monitoring and reporting rights violations
- Programme management.

December 2007- April 2008, Save the Children Sweden- Khartoum- Sudan, International Trainer- Child Rights and Protection
Team member African Union Capacity Building Programme coordinated by UNDP charged with:

- Development of training curriculum and materials on human rights, peace building, SGBV, child protection and the protection of the elderly.
- Mobilisation and training of African Union Peace keeping forces in Darfur, Sudan Armed Forces (SAF) and Rebel Factions in Darfur who are signatories to the Comprehensive Peace Agreement (CPA) on human rights, peace building and conflict management, child rights protection and promotion, protection of the elderly.
- Monitoring and reporting rights violations.
- Attending coordination meetings.
- Writing reports and documentation
- Support to other child protection projects implemented by Save the Children Sweden in the displaced camps in Darfur region.

May - December 2007, Save the Children in Uganda, Senior Programme Officer- Child Protection
Team Leader and Overall Manger of the Child Protection Sector: Coordination, Monitoring, Supervision and Technical support to the programmes in the sector.

- Training of Juvenile Justice Stakeholders in child protection and juvenile justice procedures.
- Development of training materials on child protection and SGBV for the military and government stakeholders in Northern Uganda
- Support to internally displaced children in the camps to meaningfully participate in peace building and conflict management initiatives
- Monitoring and supervising the child protection activities.
- Child protection needs identification, planning and development of new projects.
- Technical support to partner's organizations and community based organisations.
- Organizing and attending coordination meetings.
- Coordination and training of the military (Uganda Peoples Defense Forces- UPDF), Police and auxiliary

forces in Northern Uganda on basic human rights, child rights protection and promotion and SGBV,
- Writing of progress reports and donor reports.
- Supervision and mentoring of staff under the sector.

August 2006-May 2007, Save the Children in Uganda, Programme Officer- Child Protection
- Overall coordination of the capacity building programme for the military.
- Monitoring and reporting human rights violations.
- Rehabilitation and reintegration of formerly abducted children,
- Partnerships and collaboration with stakeholders in the field of child protection.
- Reporting on progress of project activities

September 2005- July 2006, Directorate of Public Prosecutions, State Attorney
- Criminal Prosecutions in courts of law
- Writing of legal advice and opinions to the Director of Public Prosecutions, Police and Government Agencies.
- Community awareness on the justice system and procedures.
- Drafting of legal documents and agreements.

June 2003- August 2005, Law Development Centre Legal Aid Clinic- Kampala, Legal Officer
- Legal representation of juvenile offenders, indigent adult petty offenders and children in need of care and protection, offering legal advice and counselling in children cases.
- Training of judicial officers, police and prison staff on juvenile justice procedures.
- Research to inform advocacy.
- Monitoring of juvenile justice programmes, Community mobilization, training and awareness on child protection, restorative justice, and juvenile justice programme especially reforms enshrined in the Uganda's Children's Act and the United Nations Convention on the Rights of the Child.
- Implementation of the diversion initiative as opposed to the formal justice system

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Environment, Health, Safety and Quality Management Consultants

Emmanuella Wanyoto, Social Scientist

Core skills

- Stakeholder Engagement Planning
- Stakeholder identification and mapping
- Social-economic impact assessment
- Environment & Social impact assessment
- Socio economic data collection
- Word processing, spreadsheets management, and presentation using Microsoft Office 2010

Details

Qualifications

- B A (Hons) in Social Sciences. (Social Administration & Sociology). Makerere University
- Postgraduate Diploma in Procurement and Supply Chain Management. - Uganda Management Institute. Kampala. Uganda
- Certificate in Environment and Social Impact Assessment.
- Certificate in Procurement and Contract Management.

Emmanuella has B .A. in Social Sciences (Social Administration & Sociology) from Makerere University Kampala and a Postgraduate Diploma in Procurement and supply Chain Management from Uganda Management Institute. She has knowledgeable experience in different sectors including Office management, administration, procurement and research. She has been involved in several Social Impact Assessments, Resettlement Action Plan Preparation and implementation and has acquired knowledge and experience in all social aspects.

She has experience and skills in the following;

- socio-economic surveys,
- community mobilization and sensitization, advocacy,
- project supervision and coordination, and
- Report writing.
- Stakeholder Engagement Planning
- Environment & Social impact assessment of projects
- Socio economic data collection, analysis and report write up.
- Focus Group discussion for various interested parties.
- Use of fliers and publications for the specific project
- Use of explanatory images
- Social-economic impact assessment of projects ranging from medium to large scale enterprise

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura

Emmanuella participated in the socio-economic assessments including the land use mapping. The project will produce 7.6MW of electricity for supply to the National Grid. The ESIA will be written based on Ugandan national legislation framework as well as international Best practice principles imbedded in the IFC sustainability framework.

Multipurpose dam on Taba – Gakomeye located between Huye and Nyamagabe District in Rwanda. Kagera River Basin Project / NELSAP.

Emmanuella coordinated the socio-economic assessments including the management of all consultation meetings with District Officers, village leaders or elders, community members and other stakeholders. Identify social - economic Impacts of the project and mitigation measures. Data compiling and report writing.

Multipurpose dam in Bigasha, Isingiro District in Uganda.Kagera River Basin Project / NELSAP.

Emmanuella coordinated the socio-economic assessments including the management of all consultation meetings with District Officers, village leaders or elders, community members and other stakeholders. Identify social - economic Impacts of the project and mitigation measures. Data compiling and report writing.

Multipurpose dam on Buyongwe River, Ngozi Province in Burundi .Kagera River Basin Project / NELSAP.

Emmanuella coordinated the socio-economic assessments including the management of all consultation meetings with District Officers, village leaders or elders, community members and other stakeholders. Identify social - economic Impacts of the project and mitigation measures. Data compiling and report writing.

Resettlement Action Plan (RAP) implementation for the Tororo - Lira 132 KV Transmission Line Rehabilitation Project. UETCL.

Emmanuella coordinated the socio-economic assessments including the sensitization and capacity building of PAPS on RAP related issues, liaison with local authorities, financial literacy training, grievance handling and management of the team.

Environmental and Social Impact Assessment proposed Commessa Technology Center to be located in Kampala Industrial Business Park, Namanve

Emmanuella coordinated the socio-economic assessments including the management of all consultations for the Environmental and Social Impact Assessment Commessa Technology Center to be located in Kampala Industrial Business Park, Namanve. Commessa Technology Center building complex was meant for hosting offices and different section of Computer Manufacturing Facility.

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Ochola Abraham, Noise & Air Quality Specialist

Core skills

Environmental and social impact assessment

Environmental Audit & Monitoring

Air Quality Assessment & Monitoring

Noise Assessment and Monitoring

Vibration Assessment and monitoring

Land use mapping

GIS and Remote sensing

Software packages including GIS, Epi Data, SPSS, and remote sensing packages

Ms Excel, Ms Word, Ms PowerPoint

Details

Qualifications

Professional Certificate in Occupational Safety and Health, OSH Academy (USA).

Certificate in Air Quality and Development Control (University of west England)

Certificate in Oil & Gas (Makerere University)

Certificate in Environment and Climate Change (Wilfrid Laurier University Canada)

Certificate of Introduction to GIS Applications (Makerere University)

Certificate in Participatory Rural Appraisal and Community Action Planning (Makerere University)

Bachelor's Degree in Environment Management, Makerere University Kampala, Uganda.

Memberships

Uganda Mountain Resource Club

Member of Makerere Environmental Management Association

PROFILE

Abraham is an Environmentalist with a bachelor's degree in Environmental Management. He has undertaken a number of studies in Oil and Gas related activities, especially in the Albertine Graben ranging from Environment & Social impact assessment, auditing, Environmental monitoring, GIS and Remote Sensing, Air and noise assessment and land use mapping. He has obtained training in Occupational Safety and Health, air quality, noise assessment and GIS applications.

Abraham has specialist skills in the following areas:

- Air Quality Assessment and Monitoring using passive diffusive samplers and E-Sampler Met One Station in collaboration with Golder Associates for King Fisher Field Development Project for CNOOC Uganda Limited
- Noise Assessment and Monitoring using Norsonic Souond Level Meter (Class 1) in collaboration with Golder Associates for King Fisher Field Development Project for CNOOC Uganda Limited.
- Air Quality Monitoring using Testo 350 Air quality Analyzer for ambient air quality and flue gaz.
- Noise assessment and moitoring using Center® Data Logger Sound Level Meter (Class II) and Casella 633 C Sound Level Meter (Class I).
- Assessement of Total Suspended Particles and Particilate matter (PM10.0, PM2.5 & PM1.0) using DustMate sampling equipment.
- Vibration/ seismograph Assessment using a Vibrock V901 equipment.
- Air Quality Monitoring using An MX6 iBrid™ Multi-gas Monitor

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Air quality and Noise assessment for Kinyara Sugar Limited, 2016

Abraham was part of the team that carried out an Environmental Audit for Kinyara Sugar Limited in particularly collection of noise and air quality data around the project environs which is located Masindi District in Western Uganda. He also analysed the data and developed reports accordingly. Kinyara is a private limited liability company specializing in the production of refined sugar, co-generation and supply of electricity power to the national grid.

Environmental Audit for Bugungu Waste Consolidation Area Environmental Audit, Total E& P Uganda, 2015

Abraham participated in Environmental Audt particularly in assessment of air quality and noise assessment within the project environs. The study was undertaken within oil field areas in Murchison Falls National Park and northern Buliisa District,and covered twenty-eight tentative locations considered for the establishment of well pads. Other studies undertaken during this assessment included flora, fauna, hydrology, hydrogeology, surface water quality, archaeology and cultural heritage, and visual quality.

Air quality and Noise for Tangi Waste Consolidation Area Environmental Audit, Total E& P Uganda, 2015

Abraham participated in Environmental Audt particularly in assessment of air quality and noise assessment within the project environs. The study was undertaken within oil field areas in Murchison Falls National Park in Nwoya District. Other studies undertaken during this assessment included flora, fauna, hydrology, hydrogeology, surface water quality, and visual quality.

Infield Road Construction Air quality and Noise assessment in Kingfisher Discovery Area for CNOOC Uganda, 2015

Abraham was part of the team that carried out an Environmental Audit for the road construction activities in particular collection of noise and air quality data around the project environs located in Buhuka Parish, Kyangwali Sub-county, Buhaguzi County, in Hoima District in Western Uganda. He also analysed the data and developed reports accordingly. This road starts at Ikamiro village, which is at the top of the escarpment and ends in the Kingfisher Discovery area found in Buhuka flats. The Audit was based on Ugandan National legislation frameworks as well as International Best practice principles imbedded in the IFC sustainability framework.

Escarpment Road Construction Air quality and Noise assessment in Kingfisher Discovery Area for CNOOC Uganda, 2015

Abraham was part of the team that carried out an Environmental Audit for road construction activities in particular collection of noise and air quality data around the project environs located in Buhuka Parish, Kyangwali Sub-county, Buhaguzi County, in Hoima District in Western Uganda. Abraham carried out Air Quality Assessment and Monitoring using passive diffusive samplers to carry out ambient air quality monitoring at three selected point for the following parameters: BTEX, NO2, SO2 and H2S. Meteorological data was gathered also using E-Sampler Met One Station in collaboration with Golder Associates for King Fisher Field Development Project for CNOOC Uganda Limited. All these data was gathered and send to South Africa for analysis.

Air quality and Noise assessment for Buliisa Base Camp-Tullow Oil Uganda, 2015

Abraham carried out air quality and noise assessment around the project environs located in Nyapeya Cell, Buliisa Town Council in Buliisa district as part of the Environmental Audit. He also analysed the data and developed reports accordingly. The Audit was based on Ugandan National legislation frameworks as well as other international principles.

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Environmental and Social Impact Assessment for Kakira Sugar Limited, 2015

Abraham was part of the monitoring team that carried out baseline data collection particularly for noise and air around the project environs. The sugar factory is located in Jinja district, Eastern part of Uganda. He also analyzed the dat and wrote a report.

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura, 2014 – ongoing

Abraham was part of the monitoring team that carried baseline data collection for noise and air quality assessment around the project environs. The project will produce 7.6MW of electricity for supply to the National Grid. The ESIA was written based on Ugandan national legislation framework as well as international Best practice principles imbedded in the IFC sustainability framework.

Environmental and Social Impact Assessment for Bugungu Camp Environmental Audit, Total E& P Uganda, 2015

Abraham participated in the Environmental Audt particularly in assessment of air and noise within the project environs. The study was undertaken within Bugungu Camp and the neigbouring areas in Bulisa district. Other studies undertaken during this assessment included flora, fauna, hydrology, hydrogeology, ambient air quality, surface water quality, archaeology and cultural heritage, and visual quality assessment.

Noise and Air monitoring for Tangi Waste Consolidation Area in Mvule Village, Latoro Parish, Nwoya District (Total E & P Uganda), 2014.

Abraham was part of the monitoring team that carried out noise and air monitoring within the entire waste consolidation area (pad). This was done in order to characterize the air quality composition and noise levels within the site and the immediate surroundings. The study was undertaken within oil field areas in Murchison Falls National Park and northern Buliisa District,and covered twenty-eight tentative locations considered for the establishment of well pads.These helped to evaluate the compliance of the operator's activities at the waste consolidation area with the set out audit criteria.

3

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Syliver Wadamba, Hydrologist

Core skills

Borehole Designs

Analysis of Test Pumping Data

Ground Water Hydraulics

Groundwater monitoring systems

Hydrochemistry

Details

Qualifications

Post Graduate Diploma in Groundwater Exploration, Exploitation and Management, Hebrew University, Israel 2003

Master of Science Degree (M.Sc) in Tropical Hydrogeology, University of Tübingen, Germany, January 2003

Professional Master (PM), in Watershed Management, ITC, Enschede, The Netherlands, 1999

Post Graduate Diploma in Education (PGDE), Makerere University Kampala, 1997

Ordinary Diploma in Civil Engineering, Uganda Polytechnic, Kyambogo, Uganda, 1996

Bachelor of Science Degree, (Bsc), Geology/Chemistry, Makerere University Kampala, Uganda, 1994

PROFILE

Syliver has undertaken professional studies in hydrology and hydrogeology with various projects ranging from oil and gas to provision of water sources (borehole drilling) to the local communities in Uganda. He has a wide range of expertise in spatial data analysis using GIS, analysis of test pumping data, borehole designs, ground water hydraulics, aerial photo interpretation, groundwater monitoring systems, hydrochemistry and computer sciences. He has also contributed to a number of ESIAs (as a Hydrology Specialist).

EXPERIENCE

Assistant Hydrogeologist for Groundwater and G.I.S Consultants Limited (July 2001 to date): Duties include:

- GIS, Aerial photo interpretation and remotely sensed data analysis, groundwater exploration data analysis, site location, Water quality and supervision of works.

- Siting of boreholes using Geophysical tools, and supervision of drilling and pump-test. Management and storage of data obtained (e.g. 1st water strike, main water strike, discharge, dynamic and static (water table) level, rock formation and soil) using computer tools, use of GIS in data management and storage and creation of maps for display

SELECTED PROJECT EXPERIENCE

Environmental and Social Impact Assessment for EA-1/EA-1A and EA-2 North Development Project (Total E&P Uganda/Tullow Uganda Operations Pty Ltd)

Preparation of Terms of Reference for surface water impact assessment for the EA-1/EA-1A and EA-2 North Development Project ESIA (Phase 1). Included site reconnaissance and review of preliminary report on baseline conditions in the project area.

Environmental and Social Impact Assessment for the proposed Nyamasoga Waste Treatment and Disposal Facility, in Nyamasoga, Hoima District (EnviroServ Uganda Limited)

Undertook a baseline hydrology and hydrogeology studies for the Nyamasoga waste management project ESIA.

Environmental and Social Impact Assessment for Kigogole Field Appraisal Drilling (Tullow Uganda Operations Pty Ltd)

Carried out baseline studies on hydrology and hydrogeology to inform an impact assessment for appraisal well drilling in the Kigogole field, Buliisa District.

Environmental and Social Impact Assessment for Kigogole-4 Appraisal Drilling (Tullow Uganda Operations Pty Ltd)

Prepared baseline study reports on groundwater resources for Kigogole-4 appraisal well drilling in Buliisa District.

Environmental and Social Impact Assessment for Kigogole-I Appraisal Drilling (Tullow Uganda Operations Pty Ltd)

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Prepared baseline study reports on groundwater resources for Kigogole-I appraisal well drilling in Buliisa District.

Declaration

I, the undersigned, certify to the best of my knowledge that this data correctly describes my qualifications and experience.

17/12/15

2

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William Okello PhD,Water Quality Specialist

Core skills

Environmental and social impact assessment

Water quality monitoring

Field insitu water parameter testing

Laboratory analysis of nutrients, heavy metals, ions, organic material and microbiogical analyses

Coordination, gathering and analysing Water quality data analysis and report development Project

Ecological survey management

Details

Qualifications

Doctorate in Natural Sciences;

Master of Science in Environmental Science and Technology (Limnology and Wetland Ecosystem Management

Bachelor of Biomedical Laboratory Technology; Makerere University

Diploma in Science Technology (Chemistry and Biochemistry Techniques);

Certificate in Alternative Technologies and Renewable Resources for a Sustainable Development,

Certificate in Regional Refresher Seminar on Decision Support Systems in River Basin Management

Memberships

Member of the Species Survival Commission of IUCN;

Member of the International Biological Control Association

PROFILE

Since 1996, William has been working in water quality research in partnership with thematic multi-disciplinary teams as well as national, regional and international collaborators with the aim of alleviating poverty as well as promoting conservation and sustainable utilisation of the natural resources. William has participated and presented papers at national and international conferences many of which are published in peer reviewed journals.

He has participated in many Environmental Impact Assessments for project development and produced aquatic ecosystem technical reports. With the passion towards water environment, William does carry out voluntary community service as a Rotarian where they have successfully managed projects that are changing the living conditions in the societies. In 2010, William provided a consultancy service to Water Management Unit, UNIDO Headquarters in Vienna on hypoxic conditions in the Guinea Current Large Marine Ecosystem. In May 2005, he participated in a four day regional working group meeting in Musoma, Tanzania where they developed and harmonised standard operating procedures for Hydro-acoustics and Environmental monitoring of Lake Victoria. Beginning from March 2005, he lectures on a part time basis at the Department of Zoology, Makerere University fulfilling his obligation of conducting training and skills development programmes for other research service providers. While still a student on training in 1996 to 1999, William participated in a Swiss project that identified causes of deteriorating water quality and developed various stakeholders' approaches to protect Jinja's lake shoreline wetlands.

Okello has specialist skills in the following areas:

- Water quality sampling, monitoring, analysis and reporting in a changing regulatory environment.
- Field insitu water parameter testing
- Laboratory analysis of nutrients, heavy metals, ions, organic material and microbiogical analyses
- Coordination, gathering and analysing Water quality data analysis and report development Project
- Carry out regulatory monitoring and reporting programs.
- Evaluate chemical and biological regulations, reports and manuscripts.
- Strong organizational skills required for water resource management.

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda

William was part of the aquatic team that collected baseline data for the kingfisher development area along Lake Albert. The mandate of this project will involve building a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura, 2014 - ongoing

This project ivolved collection of baseline data for the EIA of an electirc dam. The project will produce 7.6MW of electricity for supply to the National Grid. The ESIA will be written based on Ugandan national legislation framework as well as international Best practice principles imbedded in the IFC sustainability framework.

Senior Research Officer under the Aquatic Ecosystem Health Research Programme, National Fisheries Resources Research Institute, July 2013 to-date

Responsible for formulating experimental plans and implementation schedules in line with Uganda National Development Plan. Designing experiments and estimating experimental costs. Conducting research including collection and analysis of experimental data, writing and presentation of research results. Making the most efficient use of resources made available for experiments.

Research Officer I under the Aquatic Ecosystem Health Research Programme, National Fisheries Resources Research Institute, January 2006 to July 2013

Planned and implemented priority research on physical and chemical factors and algal dynamics affecting fish stocks, water quality and the environment for each fishery area. Analysed and synthesised information on physical and chemical characteristics of the aquatic environment/fish production systems and their influence on fish production, distribution and abundance. Harmonised work programmes and research results with regional working groups (Uganda, Kenya and Tanzania) on shared water bodies.

Project Brief for the proposed Nile 3D Seismic Coverage (Total E & P Uganda), 2013

This project was a follow up from a terrestrial 3D seismic survey that had been approved by NEMA in December 2011 spanning the areas north and south of the Victoria Nile. The Project Brief is still being reviewed by the authorities.

Environmental and Social Impact Assessment for Karuma Hydropower development - River Nile, 2012

Willaim was part of the aquatic team for the Karuma Falls Environmental Baseline study. He conducted an aquatic ecosystem study with NORPLAN Norway in the Karuma Falls zone of River Nile in Uganda, proposed for construction of a hydropower generation plant: took charge of aspects of limnology, including study of aquatic macrophytes. The study was part of an environmental impact assessment. The mitigation of possible accumulation of water hyacinth was considered.

2

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Naguyo Robert, Geologist/Hydrogeologist

Core skills

Most effective water management methods

Supervising the work of hydrometrists and other staff

Studying relationships between soil and rock features, rainfall and water run-off

Managing on-site data collection

Computer modelling applications

Statistical and hydrological modeling techniques

Details

Qualifications

Certificate in G.I.S. Data Management for Groundwater Modelling, Waterloo Hydrogeologic Inc. Canada, 2005

Certificate in Contracting and Contract Management Uganda Management Institute, 2000

BSc. In Geology, Chemistry Makerere University Kampala

1992 Professional Master degree in Water Resources Surveys, Groundwater, International Institute for Aerospace Survey and Earth Sciences, Enschede, The Netherlands, 1999.

PROFILE

Robert has twenty years of professional experience in various aspects of hydrogeology including siting and design of boreholes drilling supervision and pump testing. Other activities have included project planning and management in various drilling projects in various Districts in Uganda as well as NGOs. Expertise in hydrogeology includes computer expertise in spatial data analysis using G.I.S, analysis of test pumping data, borehole designs, ground water hydraulics, aerial photo interpretation, groundwater monitoring systems, and hydrochemistry and computer sciences. He has been a key person in previous consultancies in Uganda and Tanzania.

Robert has specialist skills in the following areas:

- Recording and analysing water resource systems data
- Employing statistical and hydrological modelling techniques
- Determining the most effective water management methods
- Assessing the impact of environmental changes and land use changes
- Predicting and monitoring rainfall, water yields and usage
- Liaising with clients, consultants, water regulators, researchers, external bodies and other professionals
- Managing on-site data collection
- Forecasting floods
- Producing water and drought management plans
- Ensuring appropriate regulations are implemented
- Keeping up-to-date with scientific and technical developments

Some of the ESIA he has participated in include:

- Environmental and Social Impact Assessment for the proposed Ngiri F Exploration Drilling (Total E & P Uganda).
- Environmental and Social Impact Assessment for the proposed Jobi E Exploration Drilling (Total E & P Uganda)
- Environmental Audit for a 3D Seismic Survey in the Jobi Rii Field area (Block 1), Nwoya District for Tullow Uganda Operations Pty Limited.
- Environmental and Social Impact Assessment for the proposed Bbegeri-C Exploration Drilling (Tullow Uganda Limited).
- Environmental and Social Impact Assessment for the proposed Jobi Field Appraisal (Tullow Uganda Limited).
- Environmental Audit of the Buliisa Seismic Camp (Tullow Uganda Operations Pty Ltd).

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental and Social Impact Assessment for EA-1/EA-1A and EA-2 North Development Project (Total E&P Uganda/Tullow Uganda Operations Pty Ltd), 2014

Robert participated in the preparation of Terms of Reference for geology and soils impact assessment and groundwater impact assessment for the EA-1/EA-1A and EA-2 North Development Project ESIA (Phase 1).

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura, 2014

Robert undertook the hydrogeological study for Kyambura Dam in Western Uganda. The project will produce 7.6MW of electricity for supply to the National Grid. The ESIA was written based on Ugandan national legislation framework as well as international Best practice principles imbedded in the IFC sustainability framework. The scope of work for the hydrological study entailed:

- Collection of quantitative and measurable data
- Use of representative samples
- Collection of site-specific (geo-referenced) data
- E-flow including water from tributaries: discuss alternative levels of e-flow and present reasons for proposed e-flow as well as anticipated residual impacts.

China Geo Engineering Corporation (U) Limited), 2014

Robert was the team leader for China Geo Engineering Corporation (U) Limited that was involed in drilling of boreholes. His roles involved:

- Coordinated with Ministry of Water-Tanzania and provided geophysical expertise for Fifty Five Boreholes in the Coastal region and Morogoro on-site Field GeoElectrical and Electromagnetic Surveys.
- Evaluated and gathered all data to generate appropriate processes.
- Managed and interpreted all 2D and 3D datasets for purposes of site selection for drilling.
- Assisted stakeholders in various analysis through interpretation of Aerial photos and Satellite images, Topographic and geological maps.

Hydro Geological consultancy Services- Survey, Design And Drilling Supervision; Wakiso, Jinja, Soroti, Katakwi, Kaberamaido, Mukono, Amuria, Iganga district local governments and ACAV-Soroti NUSAF Projects, 2006/2007

Robert was the Principal Consultant Hydrogeologist for Groundwater and G.I.S. Consultants Limited. His roles involved:

- Identifying potential sites using Aerial photos, Topographic maps, Geologic maps and Geophysics for drilling construction and pumping tests for Shallow wells and Deep Boreholes in Hard rock.
- Preparation of Tender documents, proposals, tender analysis, writing preliminary, feasibility and final reports for various water projects.
- Detailed Geophysical investigations
- Field work supervision to ensure appropriate collection of hydro-geologic data including lithology, pumping test and water quality test results; Interpretation of data, reporting.
- Contract management and co-ordination during the drilling operation

Supervised all drilling activities associated with various wells and prepared Assessments Directorate of Water Development, Water Resources Management Department, Ministry of Water, Lands and Environment, 2000/2001

Robert was the Senior Hydrogeologist at the Directorate of Water Development, Water Resources Management Department, Ministry of Water, Lands and Environment. Under this mandate he performed the following roles:

- Groundwater Assessment using analysis of geophysical test results, pumping test data, aerial photographs, existing well data in order to study the effects of groundwater abstraction on the surrounding aquifers with regard to the quality and quantity of the groundwater.
- Analysing Borehole drilling logs from nested piezometers as well as other drilled sources, hydrochemical test results and water levels obtained from routine sampling in order to study the spatial variation of groundwater potential and Hydrochemistry.

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- Using G.I.S based techniques (ARC VIEW) to analyse the spatial variation of different hydrogeological characteristics from borehole logs. Generated the first pilot Maps under the Groundwater mapping project
- Analysing geophysical and hydrochemical test results by calibrating them against borehole drilling logs from drilled sources in order to establish groundwater flow dynamics as well as groundwater potential in problematic areas.
- Analyzed and performed quality assurance tests on geophysical data.

3

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Environment, Health, Safety and Quality Management Consultants

Dr Kityo Robert, Wildlife Biologist/Terrestrial Ecologist Mammologist

Core skills

Environmental and social impact assessment

Ecological survey management

Bio-restoration

Research in biodiversity

Bio-systematics

Land-cover and land-cover change on biodiversity

Details

Qualifications

1987 - B.Sc. (honors)

1994 - M. Sc.

2009 - PhD in Zoology

Memberships

Member, Uganda's NEMA Technical Committee on Biodiversity Conservation

Member, IUCN Species Survival Commission (SSC) Fruit Bats Specialist Group

Chair – Mammal conservation Group of Nature Uganda

Member of the Uganda National Sustainable Development Forum

PROFILE

Robert obtained a BSc (1987), MSc (1994) and PhD (2008) from the Makerere University. He is presently the Museum Curator, within the Zoology Department of the Makerere University. Elected at the first African Bat Conservation Summit in Naivasha, Kenya (2013), to the Bat Conservation Africa steering committee, where Robert was elected to contest as the chairman of the steering committee. Robert has about 19 years of field experience in field ecology and assessments in the various ecosystems of Uganda (savannah, forest, High elevation and low altitude habitats)

Robert has specialist skills in the following areas:

- Close to 16 years' experience of Environmental I Impact Assessment for small and large sized projects.
- A wealth of experience as part of ESIA teams for Oil Prospects in the Albertine Graben.
- Member of the National Environment Management Authority (NEMA) technical committee on Biodiversity on Biodiversity Conservation.
- Some Basic working knowledge of GIS and mapping using DIVA-GIS and ARC GIS
- Participated in EIA Training for Uganda Impact Assessment association organised by WCS, and supported by WILD Foundation and USAID

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014

Robert was part of the terrestrial team that collected baseline data for the kingfisher development area along Lake Albert. The mandate of this project will involve building a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Terrestrial vertebrate Ecologist on team for "Uganda TSP Fertilizer Project Environment Assessment

Robert was responsible for planning and conducting the field studies and evaluation of potential impacts of the project.

Terrestrial Ecologist/ Mammal specialist on a joint RPS Hydrosearch (UK) & Environment Assessment Consult (Uganda) consultancy

Robert worked on the Environmental Impact Assessment of Seisimic Acquisition operations in Block 1 Western Uganda for Heritage Oil Corporation.

Biodiversity Assessments, Kasamene and Nzizi ESIAs, in Uganda

Field team leader and terrestrial ecologists for the field surveys. The studies required inventories of biodiversity, assessment of conservation status of species recorded and identifying areas of sensitivity.

Terrestrial Vertebrate Ecologist for the Mount Elgon Region Conservation & Environment Project (MERCEP)

Robert was responsible for planning, managing and execution of the baseline studies on mammals and herpetiles of the Mt Elgon Ecosystem

Other projects include:

Environmental audit Mbarara and Namanve Coca-Cola plants with AWE – responsible for evaluating project impacts on flora, fauna and ecology around the plants

Lead Ecologist for AWE working with Atkins for ecological assessments of the proposed Nzizi Oil pipeline

Lead ecologist/Mammalogist ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Jobi – Rii Field in Murchison Falls National Park

Lead ecologist/Mammalogist ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Mpyo-Begeri Field in Murchison Falls National Park

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Environment, Health, Safety and Quality Management Consultants

James Kalema, Vegetation and Flora specialist

Core skills

Environmental and social impact assessment

Ecological survey management

Bio-restoration of disturbed habitats

Plant specialist

Botanist Baseline vegetation and flora surveys

Details

Qualifications

B.Sc. (Hons) Botany and Zoology

M.Sc. "Regeneration and associations of selected plant species

Ph D. "Diversity and distribution of vascular plants in wetland and savanna Important Bird Areas of Uganda

Memberships

Member, Association for the Taxonomic Study of the Flora of Tropical Africa;

Member, Uganda National Commission for UNESCO Man and Biosphere programme;

Member, East Africa Plant Red Listing Authority

Member, IUCN Species Survival Commission (SSC) Global Tree Specialist Group;

Member, NEMA Technical Committee on Biodiversity

Conservation, Convener , Higher Plants Cluster, Uganda Biodiversity Network ;

Alternate Board Member, Eastern and Southern Africa Sub-regional Training Board, Wings Over Wetlands

Member and Treasurer, Plant Working Group, NatureUganda;

Member, Uganda Group of African Network of Ethnobotany and Ethnoecology (UGANEB) ;

Member, Steering Committee of the East African JRS/Botanic Garden Conservation Initiative (BGCI)

PROFILE

James is a senior vegetation and flora specialist with an experience of over 20 years. Since 2006 to-date, James is a Senior Lecturer, Department of Biological Sciences (Botany), Makerere University. From 1996 to March 2006 he was a Lecturer, Department of Biological Sciences (Botany), Makerere University. Between 1994-May to 1996, he was a Park Warden, Uganda National Parks. He was a Coordinator, Norwegian Council of Universities Committee for Development, Research and Education (NUFU) Makerere University Biodiversity and Plant- Animal Interactions Project PR063/2003. He is currently the acting Curator, Makerere University Herbarium.

James has specialist skills in the following areas:

- Managing environmental and social impact assessments (ESIAs) and securing consents for complex infrastructure planning projects
- Managing and undertaking environmental and social impact assessments to national, European Union (EU) and IFI requirements
- IFI disclosure requirements for ESIAs
- Managing dispersed, multilingual project teams
- Infrastructure developments in eastern Europe and former Soviet Union (FSU) countries, particularly Georgia, Azerbaijan, Turkmenistan, Kazakhstan and Bulgaria
- managing stakeholder consultations
- Managing ecological surveys and bio-restoration projects
- Implementing environmental management systems
- Ensuring that good environmental practice is followed during construction
- Bio-restoration of disturbed habitats.
- Redlisting and asesment of conservation status of plant axa using standard IUCN criteria and RapidList developed by IUCN
- Biodiversity survey, analysis and asesment; similarity and complementarity analysis; reserve (protected area) prioritzation and selection criteria; identifcation of candidate habitats for focused conservation eforts; use of surogacy for asesment of biodiversity value

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Selected recent project experience

Some of the selected projects under taken by James include;

- Plant specialist, survey of Dura River Sector, Queen Elizabeth National Park, Uganda, for re-opening of Dura Limestone Quarry, for Hima Cement Ltd, October 2005
- Databasing of East African flora using Botanical Research And Herbarium Management System (BRAHMS) and maping and predicting geographical distribution using GIS; ARCVIEW GIS, DIVA-GIS, ARC-GIS, BIOCLIM, MaxEnt
- Team Leader and Botanist Biodiversity surveys for environment auditing of Kasamene, Kigogole, Nsoga oil wells, Buliisa and Kisinja camps of Tullow, for Tullow Oil, October 2013
- Lead Botanist Baseline study of vegetation and flora for ESIA of Kingfisher Oil well site; Reporting to Air Water Earth, Client CNOOC, May 2013
- Lead Botanist Baseline vegetation and flora surveys for ESIA of Tangi Magazine, Pakwach for TOTAL E&P, August 2012
- Lead Botanist Baseline vegetation and flora surveys for ESIA of Alwala, Omuka and Ondyek Oil and Gas Well sites for TOTAL E&P, May-June 2012
- Lead Botanist Update of baseline vegetation and flora survey for. Mpyo 1 Oil Well in Murchison Falls National Park for TOTAL E&P, March 2012

SELECTED PUBLICATIONS

Book: Kalema, J. & Beenlje, H.J. 2012. Conservation checklist of the trees of Uganda. Royal Botanic Gardens, Kew, England

Ogwai-Okeng, J., Bbosa, G.S., Namaganda, M., Lubega, A., Zziwa, M. & Kalema, J. 2013. Toxorhynchites rutilus rutilus larvae: a potential biological control agent for malaria in Uganda. Research Journal of Biological Sciences 8(1): 1-5

Kalema, J. 2008. The use of herbarium plant databases in identifying areas of biodiversity concentration: the case of family Acanthaceae in Uganda African Journal of Ecology, 46 (Suppl.1), 125-126

Kalema, J. & Ssegawa , P. 2007. The flora of highly degraded and vulnerable wetland ecosystems of Nyamuriro and Doho, Uganda, African Journal of ecology, 45 (Suppl. 1): 28-33

Kalema, J. & Kasenene, J.M. 2007. A comparative study of regeneration under live and dead canopy trees in a tropical rain•forest ecosystem of Kibale National Park, Uganda, African Journal of Ecology, 45 (Suppl. 3): 11-17

2

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Environment, Health, Safety and Quality Management Consultants

Derek Pomeroy, Ornithologist

Core skills

Environmental and social impact assessment

Application of IFC, EBRD and other IFI requirements

Environmental and planning consents

Ecological survey management

Ecological studies

Ecological survey management

Details

Qualifications

PhD (Animal Ecology), Supervisor Professor H G Andrewartha, FAA University of Adelaide (1961 – 66).

Natural Sciences Tripos, Pt II (Zoology) – Class 11/1(Certificate in Education)

– 1954 – 58. Unversity of Cambridge: Natural Sciences Tripos, Pt (Botany, Zoology, Geology) – Class 11/1

Membership

Member of Nature Uganda

Member of Uganda Wildlife Society

Board member of the Albertine Rift Conservation Society

PROFILE

Derek is a senior ecologist and ornithologist who has spent over 30 years on field ornithology studies. He is a now retired professor from makerere university but with honorary positions in two departments at makerere university: environmental management and biological sciences, where I continue to do research and supervise postgraduate students.

Derek has worked as a consultant and a Team member for numerous projects, mainly in Uganda that have included various EIAs, proposals related to oilfield development in the western rift valley in Blocks 1& 2".

Derek has obtained specialist skills in the following areas;

- Study of origins, behavior, diseases, genetics, and life processes of birds and wildlife.
- Skills in wildlife research and management.
- collection and analysis of biological data to determine the environmental effects of present and potential use of land and water habitats.
- The biology, physiology, care and curation of birds, both domestically and in the wild.
- Lecturing and supervision of postgraduate students.

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014

Derek was part of the terrestrial team that collected baseline data for the kingfisher development area along Lake Albert. The mandate of this project will involve building a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Ornithologist

Derek participated in the Strategic Environmental Assessment of oil and gas exploration, development and production in the Albertine Graben in Uganda. Evaluated impacts on ornithology, pollution sources and impacts on the Environment; possible mitigation and alternatives in Uganda. 2012.

Derek has also under taken a number of other projects but not limited to the ones mentioned below;

- The Bujagali hydroelectric dams and transmission lines, cobalt reworking at Kasese, phosphate mining in Tororo, hydroelectric schemes near Kasese and two. lodges in Murchison Falls National Park
- More recently I have undertaken ecological studies in relation to the processes of oil exploration.
- I have also worked for IFPRI (the International Food Policy Research Institute
- Currently he is advising the National Biodiversity Data Bank (NBDB), assisted in previous years by funding from USAID, GEF, and the World Bank, and the Darwin Initiative. The NBDB produces the soon-to-be-official reports on the State of Uganda's Biodiversity , every two years. I have also assisted the depatment of Biological Sciences to revise their BSc and MSc courses in Conservation Biology.
- He served as a committee member of NatureUganda and the Uganda Wildlife Society (of which I was chair from 2006-2010) and 1 have chaired the Scientific Sub-committee of both societies. In addition, I am member of about ten learned societies, and am on the Board of the Albertine Rift Conservation Society.
- He frequently undertake editorial work and I act as a referee for the *African Journal of Ecology* and several other international journals.

2

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Dr. Twongo K. Timothy, Aquatic Ecologist

Core skills

Habitat quality evaluation and restoration

Aquatic ecosystems and the occurrence of fish

Water quality monitoring and ecological inventories

The interaction between macrophytes and nutrient and metal dynamics

Analysis of impacts of macrophytes on water discharge and sediment dynamics

Ecological and ecotoxicological assessment of water and sediments

The role of sediments in the aquatic system

Details

Qualifications

Ph. D. Zoology with focus on fisheries biology and Ecology (1973-1976) University of Guelph, Canada;

M.Sc. Biology with focus on hydrobiology and fisheries, University of Waterloo, Canada (1971-1973);

B. Sc. Zoology and Botany with Project papers on 'Terrestrial Ecology' and 'Aquatic Plants' University of East Africa Makerere Campus, Uganda (1967-1970).

Memberships

Former member of the Species Survival Commission of IUCN;

Member of the International Biological Control Association

Member and Past President of the Rotary Club of Source of the Nile, District 9200

PROFILE

Dr Timothy has over 25 years' experience in natural resources management and development with particular focus on aquatic ecosystems. The experience was gained through hands-on implementation of research and monitoring activities plus a growing number of consultancy services (see list below) on issues of natural resources management (in fisheries, water resources, wetlands, terrestrial and land use) in relation to the Nile equatorial basin lakes (Victoria, Kyoga and Albert) in particular and the upper Nile Basin in general.

Dr Timothy holds a PhD in Zoology with focus on fishery biology and ecology from the University of Guelph in Canada, a Master's degree in hydrobiology and Fisheries from the University of Waterloo in Canada and a Bachelor of Science Degree in Zoology and Botany with terrestrial ecology option and side interest in the ecology of water plants, from the University of East Africa, Makerere Campus, Uganda. He also attended a three months course in freshwater and brackish water aquaculture in The Philippines.

Timothy Specific areas of experience and skills include:

- Studies on fish species interactions; aquatic macrophytes as special habitats for fish; fish biology especially fish food and feeding, and fish reproduction;
- Coordination and monitoring of the 'Lake Productivity Program' at the national fisheries resources research institution - comprised studies on water quality and algal productivity and the role of algae and invertebrates in fishery productivity and fish production in lakes Victoria, Kyoga and Albert.
- Monitoring of invasive weeds especially water hyacinth in Uganda for over 10 years - supervised the introduction of biological control which was key in the management of water hyacinth in Lake Victoria and Lake Kyoga
- Field and supervisory experience working with field teams
- Experience in stream ecology, water quality, and environmental assessments
- Coordination, gathering and analysing Water quality data analysis and report development Project
- Strong organizational skills required for water resource management.
- Impact of pollution on the ecological status with special emphasis on macro-invertebrates, macrophytes and fish.
- Modelling stream and river ecosystems with special emphasis on the role of macrophytes and sediments

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

East African Community, Lake Victoria Environmental Management Project (LVEMP)

Timothy worked with "Centre for Resource Analysis Limited (CRA) to prepare the National Transboundary Diagnostic Analysis (TDA) for Lake Victoria Basin (Rwanda) for input into the preparations of the second phase of LVEMP.

He prepared a situational analysis of shared aquatic ecosystems in the East African Community. The review and analysis covered Lake Victoria, Lake Jipe, the Minziro Sango Bay swamp Forests and the Western Indian Ocean Coastal ecosystems. This and other analyses were used to prepare environmental assessment guidelines for shared ecosystems in East Africa.

Prepared the National Lessons Learnt Report for the Water Hyacinth Control Component (Uganda) of LVEMP for input into the preparations of the second phase of LVEMP.

Worked on UNEP through NEMA, Uganda

Timothy undertook a review of integrated water resources management of International Waters (Nile equatorial basin lakes plus groundwater resources) in Uganda and prepared a situational analysis of relevant natural resources in the country including land, forestry, wetlands, water and biodiversity; while addressing relevant legal and institutional aspects. The final output was capacity building needs assessment for integrated water resources management of International Waters in Uganda.
He also worked as the aquatic ecologist, with "Environment and Development Associates, EDA" of Uganda, to prepare a Sectoral Environmental and Social Assessment (SESA) of active and prospective mining activities in Uganda, to identify aspects for environmental impact assessment, which should precede the prospective mineral sector development in the country. The study included the watershed of Lakes Victoria, Edward and George

Environmental Baseline Study for the Karuma Falls

Timothy was the senior aquatic ecologist for the Karuma Falls Environmental Baseline study. He conducted an aquatic ecosystem study with NORPLAN Norway in the Karuma Falls zone of River Nile in Uganda, proposed for construction of a hydropower generation plant: took charge of aspects of limnology, including study of aquatic macrophytes. The study was part of an environmental impact assessment. The mitigation of possible accumulation of water hyacinth was considered.

Project Brief for the proposed Nile 3D Seismic Coverage (Total E & P Uganda)

Timothy was responsible for the collection of aquatic baseline date along the Victoria Nile. This project was a follow up from a terrestrial 3D seismic survey that had been approved by NEMA in December 2011 spanning the areas north and south of the Victoria Nile. The Project Brief is still being reviewed by the authorities.

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda

Timothy's role was to coordinate, manage and supervision of the aquatic team. The project involved collection of aquatic data in Lake Albert.Contributed to the limnology and fisheries component of a multi-disciplinary "Strategic overview of Lake Albert" towards identification of the likely risks associated with oil and gas exploration in the lake environment.

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Environment, Health, Safety and Quality Management Consultants

Dr Mathias Behangana, Herpetologist

Core skills

- Environmental and social impact assessment
- Biodiversity survey management
- Bio-restoration
- Herpetofaunal studies
- Cadastral Survey
- Project development and management

Details

Qualifications

- Ph.D. (Environment and Natural Resources) 2010 – Makerere University Kampala,
- M.Sc. Zoology 1997, Makerere University Kampala, Post Graduate Diploma in Education 1994, Makerere University Kampala,
- B.Sc. Zoology (Hons) 1992, (Ecology & Wildlife Management) Makerere University Kampala..
- Certificate in Environmental Impact Assessment Methodology, March 2011.

PROFILE

Dr. Mathias Behangana is a qualified Environmental Scientist with over 16 years experience in biodiversity research (focussing on herpetology and birds), conservation and management, climate change, its impacts and mitigation measures. The experience was gained through training in research methods, lecturing at Makerere University and Mbale Islamic University in Uganda and United States International University – in Kenya; through conducting research, consultancies and management of various pro-jects at National and Regional levels. His most recent job at BirdLife International Africa Partnership Secretariat put him in charge of man-aging a Climate Change project for the African Partnership where he among others was involved in drafting and implementing "Global BirdLife's Position on Climate Change" and building a Clearing House Mechanism – now renamed BirdLife's Climate ExChange. He is a team builder/worker, self motivated and confident, a good communicator and easily adapts to various working environments.

Functionally Mathias has experience in conducting EIAS and preparing EIAs and environmental management reports and plans; advisory support for capacity building; project identification; proposal writing; project management and accounting, project monitoring and auditing and technical inputs to projects. He also has wide experience in biodiversity surveys and monitoring, data processing, quality control and report preparation.

His work has led to several publications on tropical ecology, species conservation, amphibians and reptiles in several peer-reviewed journals and workshops proceedings.

Mathias has specialist skills in the following areas:

- Oil And Gas Studies Including Hazardous Oil And Gas Waste Management
- Wildlife and biodiversity studies
- Cadastral Survey, Valuation and Compensation Services including Resettlement Action Plans
- Project development and management
- Plants and equipment inspection, examination, certification and training
- Immigration and protocol services
- Energy studies and development
- Risk assessment

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected Professional Experience

- January 2011 to-date: Research Fellow Data Dissemination and Sharing, National Biodiversity Data Bank, Makerere University.
- July 2007–January 2009: Senior Projects officer, Climate Change and Wings over Wetlands (WOW) Projects, BirdLife Inter-national Africa Partnership Secretariat, Nairobi-Kenya.
- June 2006 – January 2007: Regional Project Coordinator, Botanical and Zoological Taxonomic Network in Eastern Africa (BOZONET) – A GEF project at PDF-B phase, administered by UNDP at the International Centre for Insect Physiology and Ecology (ICIPE), . Nairobi, Kenya.

  February 2005 – May 2006: Lecturer, Islamic University in Uganda – Mbale. 2000/2001: Research Scientist and National Biodiversity Data Bank Manager Makerere University Institute of Environment and Natural Resources. - October 1998 – March 1999: Monitoring Officer – Protected Area Assessment (PAA) Task Force, Uganda Wildlife Authority (UWA). October 1995 – March 1996: Planning Officer UWA.

Selected recent project experience

Biodiversity Consultancy with Quest Energy, 2013

Mathias provided technical capacity for Tetra Tech ARD to provide Environmental Management for the Oil Sector through identification and training of relevant stakeholders in Biodiversity, November 2013 to-date.

Biodiversity Consultancy- Herpetologist with Geo-Taxon Consult Ltd for TOTAL E&P Uganda BV, 2013

Surveying and Monitoring Crocodiles of Nile Delta/ Victoria Nile, Ramsar Site Area of Murchison Fall National Park on behalf of the Contractor, April 2013 to-date.

Environmental Consultant - Herpetologist with Air Water Earth Consultants (AWE), 2011

Environmental Impact Assessments of the Ayago Hydro Power Project for JICA, 2011-1013

Environmental Consultant - Herpetologist with BIMCO Consultancy, 2011

Herpetofaunal studies, for the ESIA for the Jobi-Rii Seismic Surveys, October 2011.

Environmental Consultant - Biodiversity Expert for BEL, Bujagali Uganda Ltd, 2011/2012

Carried out an Environmental Audit of the Bujagali Hydro Power Project, December 2011- March 2012.

Environmental Consultant & Fieldwork Team Leader for BEL-Bujagali Hydro-Power Project, 2010/2011

Monitoring potential impacts of Bujagali Hydroelectric Project on wildlife on island upstream of the the Hydro Power Project, December 2010-August 2011.

Environmental Consultant - Herpetologist with BIMCO Consultancy for Tullow Oil Uganda Ltd, 2011

Carried out Herpetofaunal studies, for the ESIA for the Mpyo- Bbegeri Seismic Surveys in Buliisa Area.; Carried out Herpetofaunal baseline studies for ESIA for the proposed Waraga 2 & 3 Terrestrial Oil Wells, June 2011.

Environmental Consultant - Herpetologist with Newplan Uganda Ltd, 2010

ESIA update studies for the Kikagati Hydro- Power Plant -focussed on Herpetofaunal Studies, November 2010.

Biodiversity Expert - Herpetologist with: WCS Uganda Country Programme, 2009

Carried out a herpetological biodiversity survey of Kabwoya Wildlife reserve and Kaiso Tonya Community Wildlife Area for the Wild Programme, Oil Impact Mitigation Component, February 2009

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Environment, Health, Safety and Quality Management Consultants

Michael Daka, Civil Engineer

Core skills

Environmental and social impact assessment

Project and contract management

Application of IFC, EBRD and other IFI requirements

Due diligence audits of ESIAs

Environmental and planning consents

Project environmental management systems and auditing during construction

Pipeline routeing and construction

Details

Qualifications

M.Sc. Eng., IHE, Delft - The Netherlands.

B. Sc. Eng. (Civil), Hons., at Makerere University

PRINCE2TM Project Management Certification (Practitioner Level) - APMG Group/OGC.

Registered Engineer, Engineers' Registration Board, Uganda (ERB Reg. No. 643)

Corporate Member, Uganda Institution of Professional Engineers (PE/674)

Council Member, Uganda Association of Consulting Engineers (2009/10)

General Secretary, Uganda Association of Consulting Engineers (2010/12)

Member, Uganda Association of Impact Assessment

PROFILE

Micheal has over 19 years' work experience as a consultant in the fields of Project management, Planning, Design, Tender preparation, Administration and Contract management of various infrastructure projects in transportation, roads and highways, buildings, hydropower in line with various standards like The World Bank, FIDIC, and Uganda's PPDA Procurement and Contract models.

Micheal has:

- Handled over 1,000kms of road design and construction, condition assessment of over 2,000 km of both gravel and bitumen roads inclusive of bridges and other drainage structures, construction materials engineering and construction supervision in line with FIDIC and PPDA Contract models.
- Conducted traffic studies for more than 10 bituminisation upgrade projects in Uganda totaling over 1,000kms and on more than 100 road links totaling over 3,000kms of both paved and unpaved roads on Uganda's existing national road network.
- Successfully managed over 50 different infrastructure development projects with a combined value exceeding USD 550 million.
- Carried out materials audits on 491 km of paved and unpaved roads in Northern and Copper belt Provinces in Zambia.
- Implemented construction, rehabilitation and maintenance of various roads using the force account as well as the contracting models.
- Conducted research on cost effectiveness of countermeasures in roadside safety on Dutch Rural Highways in collaboration with The Dutch Road Safety Institute -SWOV, The Netherlands.
- Key competence in preparation and implementation of resettlement action plans on infrastructure projects in line with The World Bank OP4.12 and Government of Uganda guidelines.
- Excellent presentation, proposal preparation, writing and reporting skills.

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Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Traffic Impact Assessment Study for Four Proposed Vehicle Inspection Stations in Kampala along Kampala-Jinja, Kampala-Entebbe, Kampala-Mpigi and Kampala-Bombo roads, Aug/Nov 2015

Micheal was the Project Manager/Senior Traffic Engineer. Activities conducted included: assignment of peak-period traffic to intersections and access points; development of figures for existing peak impact traffic hours, site traffic and total traffic; recommending proposals on access design improvements; evaluation of future traffic conditions with/Without Project (3 to 7 year horizon); and volume capacity analysis at identified intersections.

Traffic Studies for Engineering Surveys for 403km of Roads Supporting Primary Growth Sectors

Micheal was the Project Manager. The Main Consultant was SMEC and the Client was Uganda National Road Authourity.

Traffic Studies, Environmental, Social Impact Assessment and Resettlement Action Plan and for Upgrading of Kayunga-Galiraya Road (89km) to Bitumen Standard, Dec 2012-Dec 2014 (Central Uganda)

Micheal was the Project/Quality Assurance Manager. Activities included preparation of health, safety and environment interventions as part of the Environment and Social Management Plan. Main Consultant: SMEC, Client: Uganda National Road Authourity. Funding: African Development Bank.

Project Brief for Ngiri-2 Crude and Murram Transportation, June/Oct 2012 (Nwoya, Kiryandongo, Masindi and Buliisa, Northwestern Uganda)

Micheal was the Road /Highway Engineer for the ESIA study. He carried out the route assessment of Paraa-Purongo, Purongo – Karuma, Karuma –Kigumba, Kigumba-Masindi, Masindi –Biiso, Biiso- Wanseko and Wanseko-Ngiri 2 road corridor totalling 310km as part of Project Brief for to determine Environment Impacts including the health, safety and environment aspects, transportation of Crude Oil and Gravel from Oil drilling sites in Exploration Area 1/1A Albertine Graben North of the Nile to Ngiri 2 Oil Drill Pad and Camp, South of the Nile in Buliisa District. Client Eco & Partner for Total E&P.

Monitoring and Evaluation of Road Maintenance Performance in FY 2010/11 - Lot 2 (Eastern/Northern Region)

Micheal was the team Leader. The project involved twelve designated agencies (Budaka, UNRA Jinja, Iganga, Bugiri, Kapchorwa, Busia, Iganga Municipal Council, Kaberamaido, Katakwi, Mayuge, Sironko and Kaliro). The physical works involve 2,964km of mainly unpaved gravel roads. Client: Uganda Road Fund.

Financial and Engineering Audit of funds disbursed to the Uganda National Road Authority.

Micheal was the technical auditor for the project which was based on Quarter 3 and Quarter 4 (FY 2009/10). The project was funded by Uganda Road Fund.

Environment Impact Assessment and Resettlement Action Plan for proposed 85MW Thermal Power Plant in Kabaale Village, Hoima District, Western Uganda

Micheal worked as the project manager. The project was under the Integrated Power Project of the Early Oil Early Production System and the client was Jacobsen Electro AS.

Environment Impact Assessment and Resettlement Action Plan for the proposed 85MW Thermal Plant site in Kabaale Village, Hoima District, Western Uganda .

Micheal was the EIA Specialist for preliminary site assessment to develop terms of reference for Environment Impact Assessment and Resettlement Action Plan under the Tullow Oil Early Production System.

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Environment, Health, Safety and Quality Management Consultants

Dr. Deogratias Kaheeru Sekimpi, Public Health Specialist

Key skills and competencies

A team player and team builder

Qualifications

Awarded Fellowship of the Faculty of Occupational Medicine of the Royal College of Physicians of Ireland (FFOM-RCP-Ireland)-2001

Certificate in Epidemiology and Disease ControlCert. Epidemol), WHO Senior Level Epidemiology and Disease Control Course (Nairobi University/WHO/ Kenya Government)-1985

Master of Science in Occupational Medicine (M.Sc. Occup Med) (London School of Hygiene and Tropical Medicine, University of London, UK)-1984

Certificate in Industrial Health (C.I.H) (Dundee University, Scotland)-1983

Diploma in Public Health (D.P.H) (Makerere University, Uganda-1982

Bachelor of Medicine, Bachelor of Surgery(M.B.,Ch.B) Makerere University, Kampala, Uganda-1978

Membership bodies

Uganda Medical Association.

Society of Occupational Medicine SOM),UK. (1983 to 1997)

Uganda Association of Impact Assessment (UAIA)

African Federation of Public Health Associations (AFPHA, launched 31-08-2011)

East, Central and Southern Africa Public Health Association (ECSAPHA)

Canadian Public Health Association

Africa Regional Association of Occupational Health (ARAOH).

International Commission on Occupational Health (ICOH)

AREAS OF COMPETENCE

- Occupational Health & Safety
- Public Health (Community, Family & Environmental Health)
- Epidemiology
- Clinical Care
- Programme Planning and Management
- Consultancy
- Teaching
- Research
- Clinical Practice
- Advocacy for Health and Health Care

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Environment, Health, Safety and Quality Management Consultants

Selected project experience

2015 Team Leader, Rapid Assessment of Knowledge, Attitude and Practices on Health and Safety in the Health Sector, among Health Care Workers in Uganda.

2014-2016 Principal Investigator, Situational Analysis of Alcohol Control Policy in Uganda, an IDRC(Canada) funded, 4 African Countries comparative Study on Alcohol Control Policy.

2014 Consultant, Adaptation of WHO EPI Prototype Curriculum for Uganda, assigned by USAID funded Maternal and Child Health Integrated Program (MCHIP) Uganda.

2014 Team Leader (Rotary Club of Kampala North), Vocational Training Team (VTT) on Maternal and Child Health Education Project (Makerere University,Uganda/Drexel University, USA)

2012-2013 Team Leader, Environmental Assessment, Bweyale Rural Petrol Station

2012-2013 Member, Environmental Assessment, Unique Fuel Filling Station, Nsangi

2011. Team Leader, Health, Safety and Environment Audit of Green Valley farm (piggery), Gayaza, Wakiso District

2011-2012 Member, International Evaluation Team of Canadian Public Health Association Support to Public Health Associations (SOPHA) Programme (Mozambique, Congo Republic and Nicaragua).

2010-todate Project Coordinator, Pesticides Use, Health and Environment (PHE) Uganda (UNACOH and Dialogos, funded by Danish Government)

2009 – 2011 Organising Secretary of Task Force for formation and launching of the African Federation of Public Health Associations (AFPHA). 8
001 Environmental Impact Assessment Syndachem Uganda Ltd (a chemicals factory), Kampala.

2009 -2011 Team Leader ,(Health, Safety and) Environment Audit of Bright Chicks Uganda Ltd, Chicken Farm and Poultry Processing Plant, Nakifuma, Mukono District and Chicken Feed Mill, Ndese Mukono

2009-2010 Team Leader, Health , Safety and Environment Assessment and Programme Development, Nice House of Plastics, Kampala Uganda

2008-2011 Public Health Specialist (Team Member) on UN Habitat Consultancy "Assessment of Cities and Climate Change in Kampala and Uganda"

2007-2008 Project Coordinator for Village Health Team Strategy Implementation in KyenjojoDistrict with support of Canadian International Immunisation Initiative (CIII) 2 of Canadian Public Health Association (CPHA) and CIDA.

2007 Consultant for WHO Global Health Workforce Alliance on a Survey of Community Health Workers in Uganda, with focus on the Village Health Teams. (Report and Video produced)

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OTHER PROFESSIONAL AND COMMUNITY ACTIVITIES

1984 – 1990 Initiated National Occupational Health programmes (as Chief, Occupational Health and Hygiene Department, Ministry of Labour, Uganda):

- Workers' PHC programme
- Workers' Family Health programme
- Chemical Safety programme
- Occupational Health Information programme
- Occupational Health Research, Epidemiology and Statistics Programme.

1984 - 1990 Member of National Sanitation and Building Rules Revision Committees (Uganda)

1984-to-date Conceptualization, initial discussions, launching and consolidation of Uganda National Association of Community and Occupational Health (UNACOH).

1988-to-date Member of Rotary Club of Kampala North: Board member 1988-1995, President 1993/94 Secretary, National Polio-plus Committee 1996/7 Vice Chair, National Polio-plus Committee 1997/9; Member, Centennial Project Committee, 2003/2004

1995 Initiated/launched Occupational, Community and Environmental Health Consultancy (OSHFA LTD).

2002 to date Championed the implementation and popularisation of the Government of Uganda Village Health Team (VHT) Strategy for Community Empowerment and Mobilisation for Health (CEMH) in Uganda.

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KATHARINE GOTTO WALTON
M + 44 (0)7817 257327
E kgottowalton@synergy-global.net

CURRICULUM VITAE
KATHARINE GOTTO WALTON

SUMMARY

Katharine has over 20 years' international experience focused on helping organisations understand and manage their interactions with society and the environment. Her key competency is in managing the socio-economic impacts and issues surrounding large-scale development projects, in particular oil and gas joint venture projects working across corporate, government, non-government and academic sectors. As a Director at Synergy for the past 14 years, Katharine has played a critical role in the success of numerous sensitive projects alongside building a global consulting company and team of expert social performance specialists.

Katharine is a strong project manager with extensive experience on the ground including work with Shell, BG Group, BP, Tullow Oil, Putu Iron Ore and AGIP KCO and more than four years in Latin America for Shell. Her key skills include social audit, social, human rights and integrated impact assessments; project planning, implementation and assessment; stakeholder engagement and communication; social investment; wider social issue management; strategy and policy development; training; and, team building and management. Katharine co-designed and is currently facilitating internal SIA training for a multinational oil and gas company and co-leading SIA training for the IAIA. Katharine is an ISO14001 lead auditor and has led and participated in numerous external and internal audits including for the IFC Office of the Compliance Advisor Ombudsman.

Katharine previously worked for an NGO-corporate partnership (BP, BirdLife International, Fauna and Flora International) leading a global grant and training biodiversity conservation programme.

EXPERIENCE

2000 - PRESENT // SYNERGY GLOBAL CONSULTING // DIRECTOR

Executive management of Synergy and specific consultancy including:

- Ongoing SIA Training for social performance practitioners within a multi-national oil and gas company.
- Co-lead on the design/implementation of SIA Training for IAIA (May 2016, forthcoming April 2017)
- Part-time secondment as SP specialist to BG Group supporting corporate and assets in USA, Egypt, Kazakhstan and India (2015-2016)
- Social Director for the BG Tanzania LNG site selection study and subsequent ESHIA process (2013-2016)
- Social Performance specialist for Tullow Kenya providing in-country advice and support on social investment, community benefit management and community water policy and procedure (2014)
- Social advisor for Tullow Group oil exploration ESIA in southern Ethiopia (under the RSK Group).
- Social advisor for the Al Karaana Petroleum Project ESHIA in Qatar.
- External social auditor for IFC Ombudsmen office.
- Project Director for social issue management support to an iron ore exploration project in Liberia including social team capacity building alongside internal management system development.
- Project Director and Manager of Order of Magnitude Study and Pre-Feasibility study for an early phase exploration iron ore project in Congo (Brazzaville).
- Social Performance Specialist for BG Group, providing corporate and in-country advice, support and training. In-country advice included Egypt, Italy and Kazakhstan.
- Advisory, review, strategy development, implementation and training activities for Shell International at the corporate and country level including Alaska and Canada.
- Advisory and training activities with OMV Exploration and Production.
- Social performance reviews, self-assessments and assessment training for Shell International including corporate and country level activities including Bolivia, Germany and Venezuela.
- Development of a policy options papers for the UK Department for International Development regarding the extractives sector, poverty and conflict.

KATHARINE GOTTO WALTON
M + 44 (0)7817 257327
E kgottowalton@synergy-global.net

- Project Manager of an Environmental and Social Impact Assessment (ESIA) and Relocation Action Plan (RAP) external audit for a mining project in Zambia.
- Review of SIA baseline studies best practice for Shell International.
- Social and stakeholder engagement manager of the Persian LNG Project and PLNG Upstream Project integrated impact assessment (IA) in Iran, including process design/implementation of the scoping phase, local stakeholder engagement strategy, baseline data collection and IA methodology.
- Lead on the preliminary SIA for the AGIP KCO Kashagan project, Kazakhstan involving stakeholder & issue identification, evaluation of alternatives & design of the ongoing SIA process.
- Development and delivery of a training tool, Helica®, to help managers understand the complex sustainable development consequences of their decisions, used by Shell, London Business School, Said Business School, and the African Institute of Corporate Citizenship.
- Sustainable Development, External Affairs & HSE Manager, Shell Gas & Power. For over four years designed, planned and implemented Shell's strategy for the proposed Mariscal Sucre Liquefied Natural Gas Project, Venezuela. Key activities included negotiation, coordination and team building with the project partners (Venezuelan Government and Mitsubishi Corporation) and technical teams to ensure joint implementation of relevant project policies and standards, social performance management, multi-stakeholder engagement and communication, issue analysis, internal assurance reviews, integrated impact assessment design and management, HSE and logistics, and key performance indicator design.
- Sustainable development and external affairs for a proposed Shell Gas & Power project, Mexico with a specific focus on social performance, local stakeholder engagement and communication (focusing on NGOs, local communities and academic institutions), management of the integrated impact assessment process, and associated biodiversity initiatives.
- Research and development of sustainable development indicators for the UK Higher Education Sector on behalf of the UK NGO Forum for the Future.
- Biodiversity Action Plan for BP Venezuela and support to develop BP's Global Biodiversity Strategy.

1994 - 2000 // BIRDLIFE INTERNATIONAL/BP/FAUNA & FLORA INTERNATIONAL (FFI) // BP CONSERVATION PROGRAMME MANAGER

Overall management of this global grant and training programme for two international NGOs with financial support from BP. Key activities included engagement with NGOs and academic institutions in more than 40 countries, cross-sector liaison and relationship building between the organising partners, strategy development and implementation, grant process administration, technical advisory and training services, global internal and external networking, financial, personnel and consultant management, event planning and management, publicity, and marketing.

1992 & 1994 // PROJECT MERMAID '94 // RESEARCHER

Developed and managed a multi-disciplinary biodiversity conservation project including biodiversity and social research within the Cano La Brea mangrove and savannah ecosystem, Venezuela.

QUALIFICATIONS AND TRAINING

BA Zoology Honours Degree, University of Newcastle upon Tyne, 1990-1993

Advanced Management Systems Auditor, ERM Certification and Verification Services, 2006

First Aid / Exploration Medicine, Expedition Care Program, 2015

AWARDS AND MEMBERSHIP OF PROFESSIONAL BODIES

International Association for Impact Assessment (IAIA)

The Social Practitioner's Forum, Founding Member

KATHARINE GOTTO WALTON
M + 44 (0)7817 257327
E kgottowalton@synergy-global.net

GEOGRAPHICAL EXPERIENCE AND LANGUAGES

Africa: Egypt, Kenya, Liberia, South Africa and Tanzania
Americas: Argentina, Bolivia, Canada, Colombia, Ecuador, Mexico, Venezuela, USA and Caribbean
Asia: Hong Kong, India, Malaysia, Singapore and Thailand
Central Asia: Kazakhstan
Middle East: Iran, Jordan, Oman and Qatar
Languages: English (Native), Spanish (Medium spoken and Basic written)

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Opesen Chris Columbus, Sociologist

Core skills

- Stakeholder Engagement Planning
- Stakeholder identification and mapping
- Social-economic impact assessment
- Environment & Social impact assessment
- Socio economic data collection
- Monitoring and Evaluation
- Word processing, spreadsheets management, and presentation using Microsoft Office 2010

Qualifications

- PhD in Social Anthropology, Bergen Norway/Makerere University Joint Program (Candidate)
- Masters of Science in Development Management, Univesity of Agder, Norway
- Bachelors of Arts in Social Sciences

Languages

- English
- Kiswahili
- Ateso

Membership

- Member, Africa Insight Peer Review Panel, HIV/AIDS Publications (Publications Division)
- Member, Organization for Social Science Research in East & Central Africa (OSSREA)-Uganda Chapter
- Member of Sociological Association of Uganda
- Member of M &E Association of Uganda

PROFILE

Chris holds a Master of Science in Development Management (University of Agder, Norway), a Bachelors of Arts in Social Sciences, and has ten (10) years experience technical leadership in quantitative/participatory research in Uganda, Kenya & Tanzania.

He has the following skills:

- Leadership in the design and implementation of surveys, impact evaluations and organisational capacity assessments (including protocols, overseeing data-collection and performance reporting systems and capacity building of teams for quality assurance of processes and outcomes)
- Leadership in the development of training plans, materials and tools for M&E field operations/data collection
- Leadership in the management of multi-stakeholder participation dynamics for ownership of study outcomes and processes
- Documentation of achievements, success stories, and best practices in program implementation
- Analysis of Livelihoods, Value Chains & Food Security, Child Protection, Child Rights Governance, Education, Health, Nutrition and HIV/AIDS in development and emergency contexts
- Leadership in the planning and execution of evidence dissemination and debriefing processes to enhance effective operational decision making
- Application of SPSS and Spread Sheets/Excel (for statistical analysis, minimal Stata skills) and Atlas ti (for qualitative data analysis)

He has also undertaken the following trainings:

- A Certificate in Monitoring & Evaluation obtained from the E. African Population Initiatives in Collaboration with the ISAE, Makerere University in August 2008.
- A Certificate in Gender Based Mainstreaming & Analysis by OSSREA August 2011
- A Certificate in HIV/AIDS Programming awarded by BUDNET (+) in 2004

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Selected recent project experience

Qualitative client assessment of perceptions towards intrauterine contraceptive devices among women of reproductive age in Uganda (2008-2012).

Consultant (2014): Qualitative client assessment of perceptions towards intrauterine contraceptive devices among women of reproductive age in Uganda. This exercise was a conducted for PACE/PSI from April-Mid-May to benchmark its Women Health Program (WHP) Phase III running from 2013 – 2015 & an evaluation for WHP II 2008-2012.

National Development & the Poverty Reduction Process: Poverty Status Report 2012, MoFPED-Uganda Uganda (May 2012)

Technical Advisor (2012): National Development & the Poverty Reduction Process: Poverty Status Report 2012, MoFPED-Uganda Uganda, May 2012. The study was geared towards strengthening of evidence based decision making. Chirs therefore led the process of consulting & engaging with the different stakeholders using dialogues & debriefs. He particularly handled 6 regional clusters: Karamoja, Teso, Bukedi, Bugisu, Lango and West Nile.

A Participatory Assessment for Ministry of Finance, Planning & Economic Development, March -April, 2014 (Arua, Amuru, Gulu, Nakapiripirit, Mbarara, Kalangala, Kampala, Kaliro and Mbale Districts)

Lead Designer & Consultant (2014): The contribution of structural changes to poverty reduction in Uganda. A Participatory Assessment for Ministry of Finance, Planning & Economic Development, March -April, 2014 (Arua, Amuru, Gulu, Nakapiripirit, Mbarara, Kalangala, Kampala, Kaliro and Mbale Districts).

Community Participatory Assessment of HIV/AIDS Drivers &Effective Interventions (Condom Use & Faithfulness) (April 2010)

Consultants (2010): Community Participatory Assessment of HIV/AIDS Drivers &Effective Interventions (Condom Use & Faithfulness) conducted between April 21- 30 2010 in Busia, Jinja&Sironko to guide the design of the Community Based Response Approach (CBRA) being adopted by the Program for Access to Health Education & Communication (PACE formerly PSI) for its HIV/AIDS intervention Project. To translate results into decision making, I conducted a capacity assessment of CBOs in the project area to implement the Community Driven Response HIV/AIDS Approach (CDRA) & a Participatory Rapid Assessment of HIV/AIDS situation [Unfaithfulness & Incorrect &Inconsistent condom use (IICU)]. In stage II, I capacity built them not only to participatorily conduct the assessment but also to address their CDRA implementation capacity needs. This was to enhance their ownership of the report & translation of results into their decision making. Using the outcomes of this exercise, I then in stage III designed the Community Based Response Approach to HIV/AIDS participatorily with these agencies.

The Resettlement Plan for IDPs in Northern and Eastern Uganda (July 2006)

Consultant (2006): The qualitative assessment of the challenges and opportunities for health service delivery in Lira and Soroti districts by the Department of Sociology Makerere University in collaboration with the Disaster Management Department in the Prime Minister's Office.

Qualitative Assessment of Self-Reported Cause of Illness/Death & Barriers in Access to Health Care in Kaabong District for Medicines sans Frontiers (April 2011)

Qualitative M&E Specialist (2011): Qualitative Assessment of Self-Reported Cause of Illness/Death & Barriers in Access to Health Care in Kaabong District for Medicines sans Frontiers (April 2011). With the guns falling silent with the disarmament process, we recommended MSF to redesign its Program to address the psychosocial support& mental health needs of the community.

2

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Julius Opio, Soil Specialist

Core skills

Soil survey (data collection, analysis and interpretation)

Soil physico-chemical and mineralogical characterisation

Planning and execution of target orientated experiments or simulations independently and critically, and evaluation of collected data

Details

Qualifications

MSc. Physical Land Resources – Soil Science, Ghent University, Belgium

BSc. Technology (Chemistry), Kyambogo University, Kampala

PROFILE

Julius is a specialist in soil science currently employed as a Research Officer in National Agricultural Research Organisation (NARO) Mukono Zonal Agricultural Research and Development Institute (MUZARDI). He also served previously as a Research Technician (Soils) National Agricultural Research Laboratories (NARL), and has experience conducting soil mapping surveys, and land evaluations in various parts of Uganda.

His knowledge and expertise includes:

- Understanding the evolution of soils under natural and human-impacted conditions, and contribution to sustainable land use planning and integrated management of land and water.
- Field work (soil survey, soil profile description soil sampling), interpret analytical data, soil classification and interpretation of existing cartographic and remotely sensed data using modern equipment, informatics and computer technology.
- Soil physico-chemical and mineralogical characterisation with advanced techniques to understand soil processes, translate this to soil quality and assess the influences by and on natural and anthropogenic factors
- Demonstration and critical consideration of and reflection on known and new theories, models or interpretation within the specialty
- Planning and execution of target orientated experiments or simulations independently and critically and evaluate the collected data.
- Developing and executing original scientific research apply innovative ideas within research units.

RECENT CONSULTANCY EXPERIENCE

- Preparation of Terms of Reference for Geology and Soils Impact Assessment for the EA-1/EA-1A and EA-2 North Development Project ESIA
- Mapping surveys and digitizing of Uganda Soils at a scale of 1:50,000 to provide soil information more relevant for farm level applications and better land policy support, (2012-2017), a project funded by World Bank & GEF and implemented by NARO in conjunction with the MAAIF.(ongoing)
- Soil mapping and Land evaluation of Simba Farm in Mede parish Palaro sub-county Gulu district for crop suitability proper land management options for sustainable land management. Nov –Dec 2015. (completed)
- Soils and Land Evaluations for Rhino Camp Wadelai and Torchi, (AARVEE Associates Architects Engineers and Consultants) & Ministry of Water and Environment. Sept 2015- Nov 2015. (completed)
- Soil and topographical surveys for Matanda Irrigation scheme in Kanungu District. (Ministry of Water and Env't and Income farm Enhancement July- August 2015. (completed)
- Soil reconnaissance survey of EA Block 3A in the Albertine Region from Monday 15th to Thursday 18th June 2015 for Eco & Partner for purposes of environmental impact assessment. (completed)
- Soil and Land Evaluations of Kibimba Irrigation Scheme in Gomba district, (Ministry of Water and Env't and Income farm Enhancement) June – July 2015. (completed)

1

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

- Soils and Topological surveys for Design of Pilot Irrigation Scheme in Adwari Otuke District; Contract (Ministry of Water and Env't and BEC Consultants) 27th March - 6th April 2015. (completed)

Declaration

I, the undersigned, certify to the best of my knowledge that this data correctly describes my qualifications and experience.



17/12/15

2

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Mark Olokotum, Fish Taxonomist

Core skills

Fisheries and Aquatic Resources

Habitat quality evaluation and restoration

Aquatic ecosystems and the occurrence of fish

Water quality monitoring and ecological inventories

The interaction between macrophytes and nutrient and metal dynamics

Analysis of impacts of macrophytes on water discharge and sediment dynamics

Ecological and ecotoxicological assessment of water and sediments

The role of sediments in the aquatic system

Details

Qualifications

Masters In Limnology and Wetland Management (LWM) International Joint Degree Programme by BOKU (University of Natural Resources and Life Sciences, Vienna, Austria), UNESCO-IHE Institute for Water Education in Delft, The Netherlands, and Egerton University, Kenya (2015-2017).

M.Sc. Master of Science in Zoology (Fisheries and Aquatic Resources), Makerere University (2011-2013);

B.Sc in Fisheries and Aquaculture, Makerere University (2007-2010)

PROFILE

Mark holds a Master of Science in Zoology (Fisheries and Aquatic Sciences), Masters in Limnoligy and wetland management, Bachelor of Science in Fisheries and Aquaculture. He has over six years' experience in biodiversity conservation & assessments, natural resources management, research, Fisheries management, project operations, human developments and capacity building. He has collaborated with a multi-disciplinary team of environmentalists at national, regional and international levels.

He has published the following:

- Olokotum, M. (2017). The occurrence and elimination of cyanobacterial toxins in potable water in Uganda: A case of Gaba III and Walukuba waterworks. (Msc), (17192), University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, pp. 98.
- Natugonza V, Ogutu-Ohwayo R, Musinguzi L & Olokotum M (2015). Growth, mortality, and gear selectivity of Nile tilapia, Oreochromis niloticus (Linnaeus, 1758), and their consequences for fisheries management in Lake Wamala, Uganda. Sunmitted to African Journal of Ecology.
- Ogutu-Ohwayo R, Natugonza V, Musinguzi L, Olokotum M, Naigaga S & Kitabona, J. (2015) Implications of climate variability and change for African lake ecosystems, fisheries productivity and livelihoods. Submitted to Journal of Great Lakes Research.
- Naigaga S. Ogutu-Ohwayo R, Okello W, Natugonza V, Musinguzi L, Olokotum M, Kigundu V, Magezi G, Gahndi P. & Kitabona, J. (2015). Temporal variations of water quality parameters, phytoplankton, and invertebrates in environmental change hotspots: a case of Lake Wamala, Uganda. Submitted to Lakes and Reservoirs: Research and Management.
- Olokotum M, Efitre J, Ogutu-Ohwayo R, Natugonza V, Musinguzi L, Namboowa S Naigaga S & Muyodi FJ (2015). Aspects of the fishery and biology of the African catfish in Lake Wamala (Uganda) under changing climatic conditions. Submitted to Lakes and Reservoirs: Research and Management.
- Natugonza V, Ogutu-Ohwayo R, Efitre J, Muyodi FJ, Mbabazi D, Olokotum M, Musinguzi L, Namboowa S & Naigaga S. (2015). The responses of Nile tilapia Oreochromis niloticus (Linnaeus, 1758) in Lake Wamala (Uganda) to changing climatic conditions. Lakes and Reservoirs: Research and Management, 20: 101-119.
- Olokotum M. (2015) Aspects of the fishery and biology of the African catfish Clarias gariepinus (Burchell, 1822) amidst environmental changes in Lake Wamala (Uganda). MSc. Thesis. Makerere University, Kampala, Uganda.

1

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Graduate Research Assistant –Water Quality & Fish, National Fisheries Resources Research Institute (NaFIRRI), Uganda (2012 – todate)

Major duties and tasks:

- Monitoring potential impacts of Hydropower plants e.g. Bujagali, Kyambura, Kikagati Hydropower power plants
- Environmental Audit and Impact Assessment of human developments e.g. fish farming operations,
- Aquatic biodiversity and ecological assessment of rivers and wetlands for human development including CNOOC oil & gas pipeline development

Ecological Compliance Officer, Total E&P Uganda (Nov 2013 – Jun 2014)

Working on the Seismic project in Murchison Falls National Park (MFNP) and among others. Activities undertaken under this included:

- Ensuring the "Ecological good status/potential" and compliance with national legislation,
- Environmental and Social Impact Assessment (ESIA) & the Environmental Management Plans (EMPs)
- Supervision and EHS (Environment Health and Safety)

Research Assistant/Taxonomist - Fisheries Biology & Ecology, National Fisheries Resources Research Institute (NaFIRRI), (June 2010 – Dec 2013)

Worked on several projects and consultancies including:

- Modelling the Impacts and Adaptations to Climate Variability and Change and other Stressors on Inland Fisheries, Aquatic and Riparian Ecosystems
- Pollution modelling to assess impacts on fisheries biodiversity
- Surface water quality modelling to asses impacts on the ecological integrity
- Research and development

Water Quality and Fisheries Consultant (Assistant), Department of Biological Sciences, Makerere Univeristy, (June 2010 – Nov 2011)

He worked on the following projects:

- Environmental Audit and Impact Assessment of human settlement around wetlands and Ramsar sites e.g. Opeta Bisina and Kachera-Nakivali
- Virtual Ecotourism Project (www.vecotourism.org) in partnership with Wildlife Conservation Society (Uganda), Chimp-n-Sea Wildlife Conservation Fund (www.chimp-n-sea.org) and the Born Free Foundation
- Monitoring potential impacts of Bujagali Hydropower Project on wildlife upstream of the dam construction site (Dumbell Island);
- Environmental Audit and Impact Assessment of the Cage Area and Operations of Source of the Nile (SON) Fish Farm Operations;
- Assessment of Impacts of human activities on water quality and fisheries biodiversity in the Opeta-Bisina and Kachera-Nakivali Wetland systems/Ramsar Sites with Nature Uganda Ecological Monitoring Program/Consultancy

All these assignments were successful with the production of the aquatic biodiversity technical report submitted to NEMA.

2

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Environment, Health, Safety and Quality Management Consultants

Hannington Ochieng, Benthic macro-invertebrate Specialist

Core skills

Environmental and social impact assessment

Benthic macro-invertebrates assessment Ecological survey management

Aquatic Environmental and Social Impact Assessment activities

Details

Qualifications

Msc Environmental Science - Limnology & Wetland Ecosystems , UNESCO-IHE, Delft, The Netherlands, 2006

Bachelor's degree in Biomedical Laboratory Technology (Hens), Certificate in Tropical Freshwater Ecosystems Management , Kenya Wild Life Training Institute

Certificate in Freshwater invertebrates (collection, identification, preparation & taxonomy),

PROFILE

Ochieng is a qualified person in Environmental Science, specialising in Limnology and Wetland Ecosystems, with over 14 years work experience in water environment research activities. Has hands on expertise in water quality assessment and monitoring, especially using macroinvertebrates as bio-indicators. He is well versed with use of both macro-invertebrate community diversity indices and mouthpart deformities in chironomidae for assessing aquatic environmental quality. He is also familiar with physical and chemical methods for water quality assessment. He has participated in various aquatic Environmental and Social Impact Assessment activities for period over 6 years under sub-contracts of a number of consultancies. Ochieng has successfully accomplished assignments under the following projects:

- Benthic macro-invertebrate assessment within selected areas of Victoria Nile for proposed oil project under Total exploration and Production Uganda (TEP Uganda), leading to a baseline study report submitted to National Environment Management Authority (NEMA) under Environmental and social Impact Assessment (ESIA), 2013
- Sampled, analyzed data and produced a draft report on "Macro-invertebrate status" , under aquatic ecosystem baseline study for ESIA, in zone of River Nile (Karuma falls) in Uganda, proposed for construction of a Hydro power plant, under Karuma Hydro Power Project, 2010 Identified and generated data on macro-invertebr ate organisms collected from Kasamene and Nzizi areas of Lake Albert -Uganda , as part of aquatic ecology studies for ESIA connected with oil exploration/exploitation project in the area, 2010
- Spearheaded bimonthly sampling, analyses and technical reporting of physico-chemical, biological and heavy metal status within the BIDCO Industry effluents entering Lake Victoria environment , as a requirement within Environmenta l legislation and NEMA standards for the industrial effluent discharge, 2008-2009
- Supervised sampling and analyses of physical, chemical, nutrients, phytoplankton, suspended solids and oil/grease, and produced technical report, as part of initial and subsequent aquatic ecosystem quality monitoring, following hydro power construction activities under Bujagali Energy Ltd
- Supervised sampling and analyses of physical, chemical, nutrients and phytoplankton and made technical report, as part of aquatic ecosystem baseline study to guide in proposed fish restocking of selected small Kyoga lakes (Uganda), under African Development Bank (ADB) project, 2007
- Supervised sampling and analyses of physical , chemical, nutrients, phytoplankton, suspended solids and oil/grease , and made technical report, as part of aquatic ecosystem baseline study at Ngassa/Kaiso , Butiaba-Wanseko and Ngassa/Nzizi & Kingfisher/Pelican areas of Lake A lbert (Uganda), prior to oil exploration and drilling in the areas, under Tullow Oil project,2007.

1

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental and social Impact Assessment (ESIA) studies at selected areas of the Victoria Nile under TEP-Uganda oil project and Karum falls along river Nile under Karuma hydropower project in Uganda

Hannington undertook the Benthic macro-invertebrates assessment for baseline information. This was done to characterize the composition, distribution and abundance of the key macro-invertebrate taxa as food resource for fish and indicators of the prevailing environmental conditions at the would be affected project zones,'
It was also to deduce the likely environmental impacts of the project on the macro-invertebrates and suggest mitigation measures where possible.
I assessed the macro-invertebrates and reported on their status, related prevailing conditions and made recommendations accordingly.

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014 – ongoing

Hannington was part of the aquatic team that collected baseline data for the kingfisher development area along Lake Albert. The mandate of this project will involve building a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Environmental and Social Impact Assessment for the proposed hydro-electric Power Dam in Western Uganda along river Kyambura, 2014 - ongoing

This project ivolved collection of baseline data for the EIA of an electirc dam. The project will produce 7.6MW of electricity for supply to the National Grid. The ESIA will be written based on Ugandan national legislation framework as well as international Best practice principles imbedded in the IFC sustainability framework.

Environmental and Social Impact Assessment for the proposed Nile Crossing Geotechnical Survey (Exploration Area 1) - Total E&P Uganda, 2013

Hannington was part of the aquatic team that collected baseline data for a geotechnical survey of the proposed Victoria Nile Crossing project. The aim of the project was to provide recommendations for design and construction regarding the feasibility ofundertaking horizontal drilling for a potential oil pipeline.The project scope also include assembly and mobilisation of a self-elevating platform on the Nile River intended to enable geotechnical activities in the Victoria Nile. Specialist studies undertaken during this ESIA included noise and air quality, sociology, archaeology and cultural heritage, hydrology, soil science, limnology, terrestrial fauna (mammals, birds, and reptiles), water quality, and aquatic fauna (fish, benthic macro-invertebrates), and phytoplankton.

2

Eco & Partner Consult Limited

Perpetra Akite, Invertebrate Ecologist

Core skills

Environmental and social impact assessment

Bio-restoration

Data acquisition and management skills

Biodiversity surveys especially invertebrate ecology

Details

Qualifications

Diploma of the Imperial College

BSc Botany (1st Class Hons)

PhD Plant Pathology

Memberships

C Env – Chartered Environmentalist

MCIEEM – Chartered Institute of Ecology and Environmental Management

British Ecological Society

PROFILE

An energetic, motivated and highly dynamic ecologist with excellent research, data acquisition and management skills and extensive experience in natural resource management, biodiversity surveys especially invertebrate ecology and conservation of biological resources.

Perpetra has 12 years' experience as an ecologist with specialist expertise in invertebrates especially butterflies, moths, grasshoppers, dragonflies and dung beetles; some experiences with mammals especially large mammals and bats, and birds. I have undertaken biodiversity studies and research organizations/companies notably Makerere University Department of Environmental Management and Department of Biological Sciences, Wildlife Conservation Society, Flora and fauna International, BP (UK), Tullow Oil, Heritage Oil & Gas LTO, RPS Hydrosearch (UK), ERM (South Africa), Total E& P (Uganda), Air Water Earth and BIMCO among others. My major focus has often been on invertebrate surveys. As part of my graduate study, Perpetra has been actively involved in teaching some courses in her department as well as supervising some student researches

Perpetra has specialist skills in the following areas:

- Assessment of conservation status of plant taxa using IUCN criteria and RapidList organized by IUCN
- Conversant with a variety of statistical, spreadsheet and word processing software packages. Microsoft Office applications; EstimateS; PC-ORD-4; CANOCO for Windows; PISCES
- Basic GIS and mapping in Botanical Research And Herbarium Management System (BRAHMS); ARCVIEW GIS, DIVA-GIS, ARC GIS
- Project design Participated in a workshop on Project design and Participatory Rural Appraisal Techniques (March 19th- 25th 1995)
- Community Tourism: Participated in a workshop on Community Tourism initiatives, Guest Relations and Communication Skills at the Uganda Tourism Institute, Mbarara May 13th - 20th, 1995
- Pedagogy: Took part in Pedagogical training at the

  Makerere University School of Education (1997)

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Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Selected recent project experience

Environmental Baseline Study for the proposed Kingfisher Field Development (Exploration area 3A) – CNOOC Uganda, 2014

Perpetra was part of the terrestrial team that collected baseline data for the kingfisher development area along Lake Albert. The mandate of this project will involve building a range of producing and supporting facilities to achieve 50,000 barrels of oil per day. The subsurface construction will include a total of 40 wells (27production wells and 13 injection wells); and the surface construction will include well-pads, production flow lines and water injection flow lines, an oil export pipeline, a central processing facility, a lake water extraction station, camps, a jetty, an airstrip and access roads among others.

Biodiversity Assessments, Kasamene and Nzizi ESIAs, in Uganda

Perpetra was the terrestrial ecologists for the field surveys. The studies required inventories of biodiversity, assessment of conservation status of species recorded and identifying areas of sensitivity.

Terrestrial Ecologist/ Mammal specialist on a joint RPS Hydrosearch (UK) & Environment Assessment Consult (Uganda) consultancy

Perpetra worked as an ecologist on the Environmental Impact Assessment of Seisimic Acquisition operations in Block 1 Western Uganda for Heritage Oil Corporation.

Terrestrial Vertebrate Ecologist for the Mount Elgon Region Conservation & Environment Project (MERCEP)

Perpetra was responsible for planning, managing and execution of the baseline studies on mammals and herpetiles of the Mt Elgon Ecosystem.

Terrestrial Vertebrate Ecologist for the ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Jobi – Rii Field in Murchison Falls National Park

Perpetra was the lead ecologist for ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Jobi – Rii Field in Murchison Falls National Park.

Terrestrial Vertebrate Ecologist for the ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Mpyo-Bbegeri Field Field in Murchison Falls National Park

Perpetra participated as an ecologistin the ESIA for the proposed 3 D seismic survey and data acquisition for oil exploration in Block 1 Mpyo-Bbegeri Field in Murchison Falls National Park.

2

Eco & Partner Consult Limited
Environment, Health, Safety and Quality Management Consultants

Sarah Musalizi, Senior Archeologist

Core skills

Environment & Social impact assessment

Environmental Audit

Word processing, spreadsheets management, and presentation using Microsoft Office 2010

Software packages including GIS, SYSTAT, SPSS, and remote sensing packages

Mentoring and Coaching

Details

Qualifications

MSC Paleontology for Lacustrine Environment- University of Brussels & Gent, Belgium (2013-2014)

Postgraduate Diploma in Museums and Heritage Studies- University of the Western cape, South Africa (2008-2009)

Bachelor of arts (Arts) degree Tourism and, Geography- Makerere University, Kampala (2002-2005)

Advanced certificate of education (UACE)- Nabisunsa girls school (2000-2001)

PROFILE

Sarah holds a MSC Paleontology for Lacustrine Environment from University of Brussels & Gent, Belgium. She has over ten years' work experience in archeology with professional competencies in the following disciplines: Environmental and Social Impact Assessment of development projects and activities; Environmental Audits, compliance monitoring, surveillance, follow up and evaluation of development projects/activities;

Professional experience

- 2005-date, participates in the research fields, in the prospecting of the Eastern Region around Mountain Elgon and Karamoja, and Albertan region for identification and documentation of paleontological and Archeological sites.
- Participated in conducting the Physical Cultural survey of Amuru-Adjuman-Moyo road,2017
- Participated in conducting the Physical Cultural survey of the Bufulubi Solar power project in Mayuge,2016
- Participated in the training of oil and gas(CNOOC Ltd) workers on the identification of cultural heritage material in the Albertine rift,2015
- Participated in the Physical Cultural survey of Hydro Power Project 1-5 along Agago / Aswa River,2015
- Participated in conducting the Physical Cultural survey of Gulu-Atiaka,Arua-Koboko road,2011
- Cultural heritage conservation and management work with the Museums and Monuments Department of Uganda, 2007 to date.

Other relevant trainings undertaken

- Impact Assessment Training in oil development: Impacts and Mitigation by Wild Life Conservation Society in Uganda supported by USAID,2010-2011.
- Post graduate certificate in Anthropology in development processes(University of La Sapienza, Italy,2011
- Training in World Heritage Nomination course, by Centre for Heritage Development in Africa and Africa World Heritage Fund,Namibia,Okashana,2010-2011.
- Certificate in Conservation and Management of Immovable cultural heritage by Africa 2009 programme, Centre for Heritage Development in Africa, Kenya Mombasa,2007.
- Certificate in computer application Makerere University, Faculty of Social Sciences Department of Women and Gender Studies,2005

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Selected Projects and Research

-*A glance at Paleontology in Uganda*,2015, Paleontological booklet, to be published online.

-Taxonomy and ecology of the fossil freshwater molluscs from a Late Miocene palaeolake in the Albertine Basin (Uganda)-**Master thesis-2014**

-**Publication:***Curation of fossils from the Albertine Rift*, Uganda, Published in Abstracts Volume, East Africa Petroleum Conference and Exhibition'11, Kampala, February, 2011

- **Publication:***Small Apes from the Early Miocene of Napaka*, Uganda, Published paper in Geo-pal journal, Uganda, 2010

Publication: *Geological and paleontological archives relating to Early Miocene localities of Uganda* (1957-169), Geo-pal Uganda, 2009.

- **Publication:** Kasubi tombs world heritage site: *Conservation, Maintenance approaches and Challenges.* Published article in the Africa 2009 newsletter, 2008

Publication:A report, *The Potential of Birds for Tourism Attraction*,(Case study of Ziika Forest Reserve Uganda), Makerere university ,2005

2

CURRICULUM VITAE

PERSONAL INFORMATION

- **FAMILY NAME:** POPINEAU
- **First name** : Dominique
- **Date of Birth** : June 28th, 1956
- **Place of birth** : FRANCE
- **Nationality** : French
- **Home Address** : 5 rue du Panache Blanc, 64000 Pau, France
  Tel : +33 524 988 102
- **Profession** : Pipeline Expert
- **Phone (work)** : +33 559 834 657
- **Passport No** : 13 AD 66924
- **Date of issue** : 28/01/2014
- **Place of issue** : France
- **Date of expiry** : 27/01/2024
- **Father's name** : POPINEAU Jean-Claude
- **Mother's maiden name:** GREUZAT Raymonde
- **Marital status** : Married with one kid
- **Next of kin** : spouse, Martine POPINEAU
- **Phone (home)** : +33 524 988 102

SECONDARY EDUCATION

Name of School	Place	Dates	Degree or Level
Ecole de Chimie de Paris	PARIS	1971/1974	Baccalauréat F6 (Chemistry)
Lycée Charlemagne	PARIS	1974/1975	Baccalauréat C (Mathematics)

HIGHER EDUCATION

Institut National des Sciences Appliquées	LYON	1975/1980	Chartered Engineer with Physics option
Université Claude Bernard	LYON	1979/1980	Master in composite materials

PROFESSIONAL TRAINING

Total	Pau	2016	HSE for Managers
Total	Paris	2013	HSE Risks and People
Total	Paris	2012	Specialist Master Class
IFP	Rueil	2011	LNG plant design
DNV	Oslo	2010	Pipeline Design to DNV OS F 101
IFP	Rueil	2009	Safety Engineering in Design
SAIPEM	Milan	2005	Pipeline Defect Interpretation by TOFD
Penspen	Abu Dhabi	2003	Defect Assessment in Pipelines
Total Exploration Production	Paris	1997	Design and Operation of Gas Processing Plants
C.E.S.I.	Paris	1995	Lead Auditor training to ISO 9001
IBC Technical Services	London	1993	Pipeline Subsea Engineering
IIR Ltd, Industrial Division	London	1992	Corrosion Protection of Offshore Pipelines
Pipe & Pipeline International	Aberdeen	1989	Commissioning and Decommissioning of Pipelines
Cranfield Institute of Technology	London	1987	Reliability of Subsea Risers and Pipelines
Centre for Professional Advancement	The Hague	1986	Pipeline Design and Construction
Pipeline Services Ltd	Paris	1985	Non Destructive Testing of Pipeline Welds
Pipeline Services Ltd	Paris	1984	Cathodic Protection of Pipelines

PUBLICATIONS

Advances in Pipeline Technology Conference, Aberdeen 1994, 'DUNBAR Double Wall Insulated Pipeline'

Conference of the Société Française d'Études Nucléaires, Paris 2009, 'Application of automatised ultrasonic inspection coupled to TOFD for offshore pipeline installation'

NATC conference Cairo, 2012, 'CV D POPINEAU 2017'

ADIPEC Abu Dhabi, 2012, 'Repair of Subsea Pipelines by Composite System'

OTC 2013(Houston), Co-author of 'Management Process of Pipeline Integrity in Deep Water'

OTC 2013(Houston), Co-author of 'Subsea Pipeline Repair by Composite System: One step deeper'

IPC 2014 (Calgary), 'Design Of Pipeline Composite Repairs: From Lab Scale Tests To Finite Element Analysis And Full Scale Testing'

Member of 'Society of Petroleum Engineers' (#3555909)

LANGUAGES

Fluent in French and English. Spanish spoken.

CODES and STANDARDS

Conversant with design, fabrication, welding, inspection and quality assurance codes and standards for, pipeline (e.g. DNV OS-F101, ASME B 31.8 & B 31.4, API 5L, API 1104, NACE MR 01-75, ISO 13623, etc.)

EMPLOYMENT HISTORY - EXECUTIVE SUMMARY

From October 16 to present	EACOP - PAU and HOUSTON - PPT Group Pipeline Expert
From April 13 to October 16	TOTAL SA – PAU FRANCE – Technology division Pipeline Expert
From July 07 to April 13	TOTAL SA – PAU FRANCE – Technology division Pipeline specialist
From May 03 to June 07	Seconded to DOLPHIN ENERGY – ABU DHABI and DOHA QA/QC Manager - Offshore project
From May 02 to May 03	Seconded to YPERGAS OPCO – CARACAS, VENEZUELA Engineering Manager
From June 98 to May 02	Seconded to TOTAL OIL AND GAS VENEZUELA, CARACAS Senior Pipeline Project Engineer
From October 94 to June 98	TOTAL EXPLORATION PRODUCTION - PARIS Head of Quality Logistic Dpt
From January 93 to October 94	Seconded to TOTAL OIL MARINE - ABERDEEN Senior Pipeline Project Engineer
From November 89 to December 92	Seconded to TOTAL OIL MARINE - LONDON Pipeline Project Engineer
From September 85 to October 89	Seconded to TOTAL OIL MARINE - ABERDEEN Pipeline Inspection Engineer
March 82 to October 85	TOTAL EXPLORATION PRODUCTION - PARIS Inspection Engineer

EMPLOYMENT HISTORY - DETAILED NARRATIVE

From October 16 to present — **EACOP – PAU & HOUSTON – PPT Group**
Pipeline Expert

Technical adviser to management on export pipeline design.
Particularly involved on pipeline design review, pipeline route selection, site surveys, thermal insulation selection and qualification, LLHT (Long Line Heat Tracing) design and qualification, corrosion related issues, etc.

From April 13 to October 16 — **TOTAL - PAU – Technology division**
Pipeline Expert

Technical adviser to management on pipeline related strategy.
Assistance to Projects on pipeline matters, such as:

- Uganda project: follow up the conceptual and pre-FEED studies for the pipeline production network and export pipeline which will be installed between Lake Albert and the terminal on the east African coast, making it one of the longest heated pipeline in the world. Derisking of the new technology involved on this project (long line heat tracing, etc.), selection of the routing corridor, pre-qualification of contractors, etc.

- Task force Kashagan – follow up of inspection and repair of the oil and gas pipelines, following leakage.

- PNG LNG project: feasibility study of a subsea cryogenic pipeline.

- R&D activities on composite pipeline development, deep-sea pipeline installation, electrical heat tracing of thermally insulated pipelines.

- Representing Total at ISO committees on normalization.

From July 07 to April 13 — **TOTAL - PAU – Technology division**
Pipeline Specialist

Assistance to Projects, Total Subsidiaries and OPCO's on pipeline matters, and particularly involved in the following activities:

- Yemen LNG gas pipeline – Selection and installation of an anti-intrusion detection system, based on optic fiber.

- Islay pipeline – UK. Follow up of design, fabrication and laying activities of the first subsea pipe-in-pipe with electrical heat tracing.

- Gas Export Pipeline, Block 17 – Angola. Follow up of design, procurement and laying activities. Very high pressure subsea pipeline (350 bar) with fatigue and sour service concerns.

- Brass LNG pipeline: expert assistance to the project, for design and certification of the first subsea LNG pipeline.

- Setting up PRS (Pipeline Repair System) for various subsidiaries and PRS Club for QP (Qatar). Involved in ADC set up (PRS club in Angola)

- Expertise assistance for ruptured or damaged pipelines investigations and repair, stabilisation of freespans and landfall, etc…

- Conceptual studies involving insulated pipes (pipe-in pipe or PU foam) and electrically heated pipelines.

- Assistance for precommissioning of major gas pipelines.

EMPLOYMENT HISTORY - DETAILED NARRATIVE, continued….

From May 03 to June 07

DOLPHIN ENERGY – ABU DHABI and DOHA
QA/QC Manager – Offshore project.

Responsible of the aspects related to pipeline material selection, procurement, welding and QA/QC of the Dolphin Energy Offshore project: 370 km export gas pipeline 48", 165 km of sealine 36" sour service, 2 umbilicals, 2 offshore platforms and related facilities for sour gas production and transport.

Management of project activities:
- Responsible for the procurement of carbon steel pipe, from technical definition, to delivery on site and then anti-corrosion and concrete coating.
- Recruitment and management of the QA/QC team (80 inspectors at peak) on more than a dozen sites
- Responsible for the Inspection Contracts (on site and abroad) for pipeline, pipeline coating, valve fabrication and pressure vessels.

Particularly involved in:

- Follow up of pipe manufacturers.
- Definition of welding and NDT requirements: qualification of welding procedure (sour and sweet) and AUT inspection method.
- Valve fabrication, from technical definition to delivery to site.
- Procurement of the sour service items (bens, tees, valves, etc...)
- Procedure qualifications and QA/QC of the pipe coating activities (anti-corrosion and concrete) on 3 different yards.
- QA/QC of the laying activities
- QA/QC of the umbilical fabrication.
- Pre-commissioning activities of the pipelines.

From May 02 to May 03

YPERGAS OPCO– VENEZUELA CARACAS
Engineering Manager

Responsible of the engineering, procurement, construction and QA / QC of the Yucal Placer project: export gas pipelines and processing facilities for sour gas containing 20% CO2.

Management of project activities:
- Responsible of the Engineering team.
- Responsible of procurement of duplex pipe and pressure vessels, from technical definition, to delivery on site.
- Recruitment and management of the QA / QC team.
- Responsible for the Inspection Contracts (on site and abroad) for pipeline, anti-corrosion coating, piping and pressure vessels.

Particularly involved in:
- Selection and follow up of duplex equipment manufacturers.
- Definition of metallurgical and welding requirements.
- Corrosion protection philosophy
- Pipes (sour service carbon and duplex steel) purchase and inspection.

EMPLOYMENT HISTORY - DETAILED NARRATIVE, continued….

From June 98 to May 02

TOTAL OIL AND GAS VENEZUELA- CARACAS
Senior Pipeline Project Engineer

Responsible of the design and QA / QC of the Jusepin Pressure Maintenance Project: two gas injection pipelines, 6" and 10" diameter, operating at 10 000 psi in sour service conditions.

Management of project activities:
- Responsible of the design of the Pressure Maintenance system, in accordance to the relevant Codes, Company Specifications, and local regulations.
- Responsible of procurement from technical definition, to delivery on site.
- Recruitment and management of the QA / QC team.
- Responsible for the approval and follow up of the QA/QC procedures.
- Responsible for the Inspection Contracts (on site and abroad)
- Responsible for the Cathodic Protection Contract.

Particularly involved in:
- Selection and follow up of procurement contractors (valves, tees, pipes,.)
- Definition of metallurgical and welding requirements.
- Selection and approval of welding (sour service) and NDT procedures.
- Approval of the Final Quality Dossier.
- Definition of testing programme for Sour Service certification
- Design and start up of the Cathodic Protection system.
- Conversion study of the plant to sour service, with purchase of long lead items.

From October 94 to June 98

TOTAL - PARIS
Head of Quality

Manager of Quality Assurance for well and drilling equipment
Logistic department - TOTAL Exploration and Production

The tasks covered by this function are:

- Development of the TEP Quality Policy.
- Development and maintenance of inspection procedures and specifications.
- Evaluation and certification of new supplier plants.
- Assessment of supplier QA systems and performance of audits.
- Monitoring of quality levels.
- Technical expertise on equipment selection (design, material,...) and integrity assessment.
- Participation to ISO working groups on premium connections.
- Management of the QA group including 20 inspectors (world wide basis) and 2 assistants.
- Selection and testing of inspection personnel.
- Management of inspection service contract (value 1.5 M$).
- Responsible for related budget.

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EMPLOYMENT HISTORY - DETAILED NARRATIVE, Continued….

From January 93 to October 94 **TOTAL OIL MARINE (ABERDEEN)**
Senior Pipeline Project Engineer

Responsible for the pre-fabrication of the 16"/20" Dunbar-Alwyn double-wall insulated export pipeline, first ever subsea pipe-in-pipe. Budget M£5.

Management of project activities, specifically including:
- Approval of fabrication procedures.
- Selection of fabrication yard
- QA / QC of fabrication.
- Definition of inspection requirements and acceptance testing.
- Management of inspection team.
- Responsible of budget and contracts.
- Management of interface with Total Operation Group (Commissioning and In Service Inspection).

Specific involvement in:
- Welding design and QA/QC.
- Corrosion protection design and material selection.
- Engineering control on pipeline behaviour (structural analysis by FEA, thermal performance).
- Company's representative at fabrication site.
- Definition of performance criteria for acceptance tests

From November 89 to December 92 **TOTAL OIL MARINE (LONDON / ABERDEEN)**
Pipeline Project Engineer

Bruce Gas Export Pipeline (32") Project.

Responsible for the design, engineering, procurement, QA, construction, installation, precommissioning and commissioning of the Bruce Gas Export Pipeline and its subsea components including Wye, subsea valves and protective structures.

Budget : £35m. Management of project activities, specifically including :
- Design validation of the riser, pig trap and subsea expansion loop.
- Management of procurement of all pipeline components and materials.
- Installation engineering for the pipeline and its components such as spool pieces, pre-commissioning valve subsea Wye and protection structures together with the offshore installation supervision.
- Pre-commissioning of the Gas Export pipeline.
- Coordination of intervention works on the FRIGG pipeline in particular, the development and testing of intervention devices.
- Coordination of the decommissioning and pre-commissioning of the FRIGG pipeline.
- Supervision of the Wye Design and manufacture.
- Preparation of Maintenance and Operating procedures incl. of repair procedures
- Preparation of pigging philosophy in operation, including instrumented pigging.

EMPLOYMENT HISTORY - DETAILED NARRATIVE, Continued….

From September 85 to October 89 **TOTAL OIL MARINE (ABERDEEN)**
Pipeline Inspection Engineer

Responsible for inspection and maintenance of the Frigg – Alwyn pipeline network (32" 720 km, 24" 115 km). 1988 Budget M£ 2.8.
St. Fergus pipelines (32" OD - 720km) and the ALWWYN to
Management of the pipeline inspection function, including:

- Development of the inspection philosophy and long term inspection programme.
- Definition of annual inspection programme: selection and specification of inspection methods relating to subsea surveys, internal inspection, platform and terminal ends inspection.
- Organisation of subsea work and instrumented pigging programmes.
- Responsible for corrosion monitoring, fluid analysis and corrosion inhibition treatment programmes.
- Qualification test of instrumented pigs for extensive integrity check of pipeline network.
- Qualification and selection of contractors for inspection services and engineering studies relating to integrity assessment.
- Pipeline Technical Authority, in charge of reporting and co-ordination with Authorities (Department of Energy and Norwegian Pipeline Directorate) and partners.
- Responsible of the EPRS maintenance and procedures update.
- Responsible of inspection/maintenance budget.

From March 82 to October 85 **TOTAL EXPLORATION PRODUCTION - PARIS**
Inspection Department - Inspection Engineer

Development of service inspection specifications for oil & gas plant and offshore installations, scope : piping, process and utility pressure vessels, storage tanks, steel structure, jacket and pipeline.

Particularly involved in technical review and approval of welding work (specification, qualification, performance, inspection requirements and acceptance criteria) and development of non-destructive inspection methods for specific applications.

Seconded to:

- ADMA-OPCO (ABU DHABI)
Supervision of underwater inspection on 30" sour gas export line between Umm Shaif and Das Island, for confirmation of extent of HIC corrosion.

- TOTAL ABK (ABU DHABI)
Expertise on vibrations of an 18" production line.
Quality control of heat exchangers fabrication (high nickel alloys).
Organisation and supervision of an acoustic emission survey of three high pressure separators.

- TOTAL INDONESIE (KALIMANTAN)
Head of inspection service replacement, in charge of plant in service inspection and quality control of plant modifications.

- TOTAL PARIS
R&D in non-destructive testing techniques in relation with "J curve pipeline laying" project.
Development of an automatic inspection prototype for electron beam welding.