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REPORT - VOLUME 3, PART 1

CNOOC UGANDA LIMITED

Environmental and Social Impact Assessment for Kingfisher Field Development Area, Uganda

Construction Phase Environmental and Social Management Plan (C-ESMP) for the Feeder Pipeline

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Acronym	Description
3LPP	3 Layer Polypropylene
BLPD	Barrels of Liquid per Day
BOPD	Barrels of Oil per Day
BS&W	Basic sediment and water content of crude oil. Part of quality specifications.
BVS	Block Valve Station
BWPD	Barrels of Water per Day
CCR	Central Control Room
CCTV	Closed Circuit Television
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLOs	Community Liaison Officers
CNOOC	China National Offshore Oil Corporation
CPF	Central Processing Facility
CR	Critically Endangered
CUL	CNOOC Uganda Limited
CV	Curriculum Vitae
DEO	The District Environment Officer
DRC	Democratic Republic of Congo
DWRM	Directorate of Water Resources Management
EA	Exploration Areas
EBS	Environmental Baseline Study
EFOs	Environmental Field Officers
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESIA	Environmental and Social Impact Assessment
ESIS	Environmental and Social Impact Statement
ESMP	Environmental and Social Management Plan
ESP	Electric Submersible Pump
ICSS	Integrated Control and Safety Systems
IFC	International Finance Corporation
IPIECA	International Petroleum Industry Environment and Conservation Association
IT	information technology
IUCN	International Union for Conservation of Nature
KF	Kingfisher
KFDA	Kingfisher Field Development Area
LC	Least Concern
LC	Local Council
LP	Liquefied Petroleum
LPG	Liquefied Petroleum Gas

Acronym	Description
LSA	Local Study Area
mbgl	metres below ground level
MEMD	Ministry of Energy and Mineral Development
MGLSD	Department of Occupational Safety and Health, Ministry of Gender Labour and Social Development
MMS	Machine Monitoring System
MPFM	Multiphase Flow Meter
MTWH	Department of Museums and Monuments, Ministry of Tourism, Wildlife and Heritage
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NGO	Non-governmental Organisations
NPSH	Net Positive Suction Head
NSRs	Noise Sensitive Receptors
OGP	International Association of Oil and Gas Producers
PEPD	Petroleum Exploration and Production Department
PLDS	Pipeline Leak detection System
PLMS	Pipeline Leak Monitoring System
PM	Particulate Matter
PPE	Personal Protective Equipment
PS	Performance Standards
PSAs	Production Sharing Agreements
Ptb	Pounds per Thousand Barrel
RAP	Resettlement Action Plan
RSA	Regional Study Area
RTU	Remote Terminal Unit
RVP	Reid vapour pressure (RVP) is a common measure of the volatility of gasoline.
SCADA	Supervisory Control and Data Acquisition
SEHT	Skin-effect Heat Tracing System
SoCs	Species of Conservation Status
SOW	Scope of Work
SPT	sewage treatment plant
UCPs	Unit Control Panels
UNRA	Uganda National Roads Authority
UWA	Uganda Wildlife Authority
VOC	Volatile Organic Compounds
VOIP	Voice over Internet Protocol
WAT	Wax Appearance Temperature
WHCP	Hydraulic Wellhead Control Panel
WMD	Wetlands Management Department
WRMD	Water Resource Management Directorate

1.0 INTRODUCTION

This Construction Environmental and Social Management Plan (FP C-ESMP) guides the environmental and social management of China National Offshore Oil Corporation's (CNOOC) proposed development of the Kingfisher Development Area (KFDA). It pertains directly to the construction phase of the Feeder pipeline only (hereafter referred to as the Project). Environmental and social management of the construction phase of Central Processing Facility (CPF), wells, and ancillary infrastructure is addressed separately from this FP C-ESMP. The FP C-ESMP aims to mitigate and enhance potential negative and positive impacts respectively. Responsibilities for implementing mitigation measures are allocated and appropriate monitoring actions are described.

The FP C-ESMP has been informed by the ESIA (and associated specialist studies) conducted by an Independent Consultant on behalf CNOOC, and as such must be read in conjunction with the ESIA executive summary. Key objectives of the FP C-ESMP are to:

- Facilitate compliance with applicable acts, regulations and guidelines;
- Avoid and/or minimise negative social and environmental impacts of the Project and maximise positive impacts;
- Recognise that social responsibility and environmental management are among the highest corporate priorities;
- Assign clear accountability and responsibility for environmental protection and socio-economic enhancement to management members and employees;
- Facilitate environmental and social planning throughout the Project life cycle;
- Provide a process for achieving targeted performance levels;
- Provide appropriate and sufficient resources, including training, to achieve targeted environmental performance levels on an on-going basis; and
- Evaluate environmental performance and social responsibility against CNOOC's environmental and social policies, objectives and targets and seek improvement where appropriate.

The FP C-ESMP is a "living document" and information contained in this version will be reviewed and updated as and when necessary. The findings and recommendations flowing from environmental and social monitoring assessments (annually or more frequently) by internal / external auditors will form the basis of updates to the FP C-ESMP, as required.

CNOOC will develop and implement an Environmental and Social Management System (ESMS) in accordance with their environmental policies to ensure that environmental impacts caused by the Project are continually monitored and to provide a basis for the development of improved impact management measures. The ESMS will be in place prior to construction starting and will accommodate the stipulations contained in the relevant environmental laws and regulations of Uganda.

1.1 What is included?

The FP C-ESMP stipulates management measures for the impacts of all CNOOC's construction activities directly related to the Feeder Pipeline (i.e. the Project) within the KFDA on the Buhuka Flats, along the south-eastern side of Lake Albert. The FP C-ESMP:

- Defines a set of rules for managing the construction of the project in the license area. These rules are based on detailed work done for the ESIA), and have social and environmental components which all construction activities must comply with; and
- Covers the construction of the Feeder Pipeline to the point at which the infrastructure has been established. All necessary enviro-social monitoring and management activities are detailed in the Construction ESMP (FP C-ESMP).

Environmental Impact Management Measures

An environmental impact is defined as any change to the environment, whether adverse or beneficial, resulting from a project activity. Listed below are some typical environmental impacts that could adversely affect the environment:

- Pollution of surface and groundwater resources by contaminated runoff;
- Emission of harmful gases and/or particulates into the atmosphere;
- Seepage of contaminants from hazardous materials into soil or water;
- Generation of harmful or nuisance noise;
- Death or injury to animals;
- Destruction of natural habitat, leading to reduced biodiversity;
- Reduction of local residents' ability to produce food and make traditional use of the ecological resources of the area;
- Damage to cultural and heritage resources; and
- Degradation of visual aesthetics.

The Project will go through a life cycle consisting of three phases, namely construction (site clearing, excavation and construction of pipeline and supporting infrastructure) and operation (crude transport), and decommissioning (closure). The activities, their impacts and the management actions required to implement the recommended mitigation measures are dealt with in the sub-sections below.

1.2 What is excluded?

The FP C-ESMP does not include the management of impacts associated with the CPF, wells, and ancillary infrastructure. The reader is referred to the CPF, wells, and ancillary infrastructure Construction ESMP (C-ESMP, 2017).

Issues related to compensation and resettlement are not addressed in this FP C-ESMP either and the reader is referred to the CNOOC resettlement and compensation process and associated documentation. Document

Any queries in this regard should be addressed directly with CNOOC (Table 1-1).

Table 1-1: Details of the developer, CNOOC

Title	**CNOOC Uganda Limited**
Organisation	CNOOC Uganda Limited (CNOOC)
Postal address	CNOOC Uganda Limited Simba Towers, Plot 22 Acacia Avenue, P.O BOX 7862, Kololo, KFDAMPALA, UGANDA
Contact Name	Andrew Otuba
Telephone	+256204500223
Cellular phone	+256772798111
E-mail	Andrew.OTUBA@cnoocuganda.com

The FP C-ESMP also excludes specifications regarding occupational health, hygiene or safety requirements. CNOOC and Contractor obligations in this regard are determined by legislation, and CNOOC's requirements are specified in the Main Contract documents.

1.3 Report Structure and Content

The FP C-ESMP is structured as follows:

- Chapter 2 describes CNOOC's environmental and social policies and commitments in Uganda.
- Chapter 3 describes the construction activities covered by this FP C-ESMP that are directly associated with the Feeder Pipeline.
- Chapter 4 describes the environmental management structure, including the approach to the FP C-ESMP and the organisational structure and responsibilities relevant to the project.
- Chapter 5 sets out the detailed specifications, including management of impacts associated with the construction phase.
- Chapter 6 describes requirements for performance assessment, corrective action, management review and auditing.
- Chapter 7 sets out requirements for competency training and awareness creation.
- Chapter 8 outlines requirements for dealing with emergencies.
- Chapter 9 specifies requirements for document control.

The content of the report is set out according to an internationally recognised framework, which includes the following:

- Avoidance / mitigation / management measures required during the construction phase of the project;
- A description of the activities necessary to achieve the mitigation measures;
- Programming and scheduling requirements;
- Definition of responsibilities, resources, communication and reporting structures;
- Specification of performance evaluation requirements;
- Identification of training requirements;
- Identification of monitoring requirements; and
- Identification of audit requirements.

1.1 Key point of contact

The key point of contact for the Kingfisher Field Development Area is indicated in Table 1-1.

Table 1-2: Details of the developer, CNOOC

Title	**CNOOC Uganda Limited (CNOOC)**
Organisation	CNOOC Uganda Limited (CNOOC)
Postal address	CNOOC Uganda Limited Simba Towers, Plot 22 Acacia Avenue, P.O BOX 7862, Kololo, KAMPALA, UGANDA
Contact Name	Andrew Otuba
Telephone	+256204500223
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E-mail	Andrew.OTUBA@cnoocuganda.com

2.0 CNOOC POLICIES AND COMMITMENTS IN UGANDA

CNOOC's development philosophies are listed in Table 2-1, while environmental, health and safety specifications and are listed in APPENDIX A with relevant project design codes and standards. All documents form part of the FP C-ESMP and must be complied with at all times, as applicable.

Table 2-1: CNOOC development philosophies

Reference	Philosophy
KF-FS2-RPT-CPF-SA-0002	Environmental Philosophy
KF-FS2-RPT-CPF-SA-0003	Noise Control Philosophy
KF-FS2-RPT-CPF-SA-0004	Waste Management Philosophy
KF-FS2-RPT-CPF-SA-0007	Design HSE Philosophy
KF-FS2-RPT-CPF-SA-0008	Oil Spill Contingency philosophy
KF-FS2-RPT-CPF-SA-0009	Emergency Response Philosophy
KF-FS2-RPT-CPF-C0-0001	Telecommunication Philosophy
KF-FS2-RPT-CPF-EL-0001	Electrical Power System Philosophy
KF-FS2-RPT-CPF-PR-0006 REV0	Restart & Displacement Philosophy
KF-FS2-RPT-CPF-IN-0001 REV0	Control & Instrument Philosophy

2.1 Leadership and Commitment

CNOOC commits itself to deliver sustainable energy to society by promoting clean, healthy, and green energy development models with their partners along the industry chain. The development of existing natural resources must be undertaken in a safe, efficient, and environment-friendly manner and provide society with clean, reliable, and stable energy that will meet people's reasonable energy demands.

2.2 Corporate Social Responsibilities

During project implementation, CNOOC must communicate their strategy toward social investment in Uganda and in particular, in regions and local communities potentially affected by the project. This strategy should emphasise the distinction between social investment offered as philanthropic good will to support community needs and "mitigation" required to reduce negative impacts. This distinction should be combined with efforts to align ongoing communication processes between the community liaison officers and the local communities. CNOOC currently engages in activities that benefit society and is involved in the following ventures in Uganda:

- Support to Education Best Performers' Award;
- Basic Skills Training;
- Buhuka School Donation;
- Promotion of Culture and Talent;
- Support to Health Sector and Medicine Donation for Ntoroko District Health Centers; and
- Disaster Relief Donation.

2.3 Compliance with Legislation and Best Industry Standards

CNOOC is committed to comply with all Ugandan environmental legislation. A legal register in this regard is maintained and regularly updated. CNOOC will also comply with best industry practice worldwide and, to this end, uses the IFC and World Bank Performance Standards, Safeguard Polices and the Equator Principles as a guide to its actions.

The following international principles and standards have been incorporated into the FP C-ESMP:

- Equator Principles;
- IFC Documents, including:
  - IFC Performance Standards on Social & Environmental Sustainability, including:
    - Performance Standard 1: Social & Environmental Assessment & Management System;
    - Performance Standard 2: Labour and Working Conditions;
    - Performance Standard 3: Pollution Prevention and Abatement;
    - Performance Standard 4: Community Health, Safety and Security;
    - Performance Standard 5: Land Acquisition and Involuntary Resettlement;
    - Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management;
    - Performance Standard 7: Indigenous People; and
    - Performance Standard 8: Cultural Heritage.
- Doing Better Business Through Effective Public Consultation and Disclosure: A Good Practice Manual, International Finance Corporation 1998;
- General IFC Environmental, Health and Safety (EHS) Guidelines, including Environmental, Occupational Health and Safety and Community Health and Safety and Construction and Decommissioning (e.g., Air Emissions and Ambient Air Quality, Noise); and
- Workers' accommodation: processes and standards: A guidance note by IFC and the EBRD.

2.4 Mitigation hierarchy

The priority of environmental management is always to minimise adverse impacts, thereafter management measures with other objectives are considered. Environmental management measures can be varied and the measures themselves can have a variety of objectives. World Bank guidelines for a best practice approach to the management of environmental and social impacts are presented in Table 2-2.

Table 2-2: Primary objectives of mitigation measures for adverse environmental impacts (listed in decreasing order of priority)

Objective	Description
Avoidance	■ Avoiding activities that could result in adverse impacts. ■ Avoiding resources or areas considered as sensitive.
Prevention	■ Preventing the occurrence of negative environmental impacts and / or preventing such an occurrence having negative environmental impacts.
Preservation	■ Preventing any future actions that might adversely affect an environmental resource. Typically achieved by extending legal protection to selected resources beyond the immediate needs of the project.
Minimisation	■ Limiting or reducing the degree, extent, magnitude or duration of adverse impacts. This can be achieved by scaling down, relocating, or redesigning elements of a project.
Rehabilitation	■ Repairing or enhancing affected resources, such as natural habitats or water sources, particularly when previous development has resulted in significant resource degradation.
Restoration	■ Restoring affected resources to an earlier (and possibly more stable and productive) state, typically ‘background / pristine’ condition.

Objective	Description
Offset	■ Creation, enhancement or protection of the same type of resource at another suitable and acceptable location, offset for lost resources.

Ref: The World Bank. Environment Department. January 1999. Environmental Management Plans. Environmental Sourcebook Update. Number 25

3.0 PROJECT DESCRIPTION

This section describes the Project area and the nature of the activities covered by the FP C-ESMP. The FP C-ESMP relates solely to the construction phase of the Feeder pipeline starting at its connection point to the central processing facility (CPF) located on the Buhuka flats and extending to the north-east to the point at which the feeder pipeline connects at its tie-in point to the oil export pipeline in proximity to Kabaale.

The Kingfisher field development area also includes production and beneficiation infrastructure located on the Buhuka flats. This infrastructure is handled under a separate set of environmental and social management plans. These two broad components of the Kingfisher field development area are briefly outlined here for reference. A detailed description of all components of project infrastructure are contained in the ESIA project description and summarised in the ESIA summary.

3.1 Wells, flowlines, CPF and supporting infrastructure

The wells, flowlines, central processing facility (CPF) and supporting infrastructure is situated mainly on the Buhuka Flats in the Kingfisher Field Development Area (KFDA), along the south-eastern side of Lake Albert. The subsurface engineering will entail drilling of wells from four onshore well pads Pad 1, Pad 2, Pad 3 and Pad 4A. A total of 31 wells will be drilled, 20 of which will be production wells and 11 utilised for water reinjection into the formation. The produced well fluids will be conveyed to the CPF through the infield flow lines from the respective production wells. The CPF will process the fluids by separation / removal of the produced water, sand, salts and associated gas (together with small quantities of other material), to produce crude oil that meets the crude oil export standard.

At the CPF the associated gas will either be converted into power to meet the requirements of the facility or converted into LPG No gas flaring is contemplated except in cases of emergency. Excess power generated during the latter part of the production facility's lifespan will be exported to the national grid, but no infrastructure associated with this power export has formed part of the initial ESIA process and has yet to be permitted. Consequently, no infrastructure associated with power export forms part of the set of EMPs developed at this stage.

Supporting infrastructure associated with the production facility will include in-field access roads and flowlines, the upgraded jetty, and a water abstraction station on Lake Albert, a permanent camp, a material yard (or 'supply base'), and a safety check station at the top of the escarpment.

3.2 Feeder Pipeline

The FP C-ESMP applies to the Feeder Pipeline which extends from the CPF storage tanks to a delivery point near Kabaale (Figure 1). The feeder pipeline leaves the battery limits of the CPF on the east side of the plant, turning northward to the base of the escarpment, where it turns directly east up the escarpment. The average gradient in this section of the route is 1:3 (Vertical: Horizontal), rising from roughly 650 to 1040 m.a.m.s.l. within a horizontal distance of 740 m. From this point, the pipeline is routed north-eastward in gently undulating terrain, extensively cultivated and interspersed with rural settlements. The route passes south-east of Hohwa and Kaseeta villages and passes immediately north of the planned Kabaale Airport, turning eastward to the delivery point at the proposed Kabaale Refinery. The total length of the pipeline is approximately 46 km. Detailed mapping of the alignment of the feeder pipeline in proximity to local villagers and houses can be found in the Vol 1 section 6 of the ESIA.

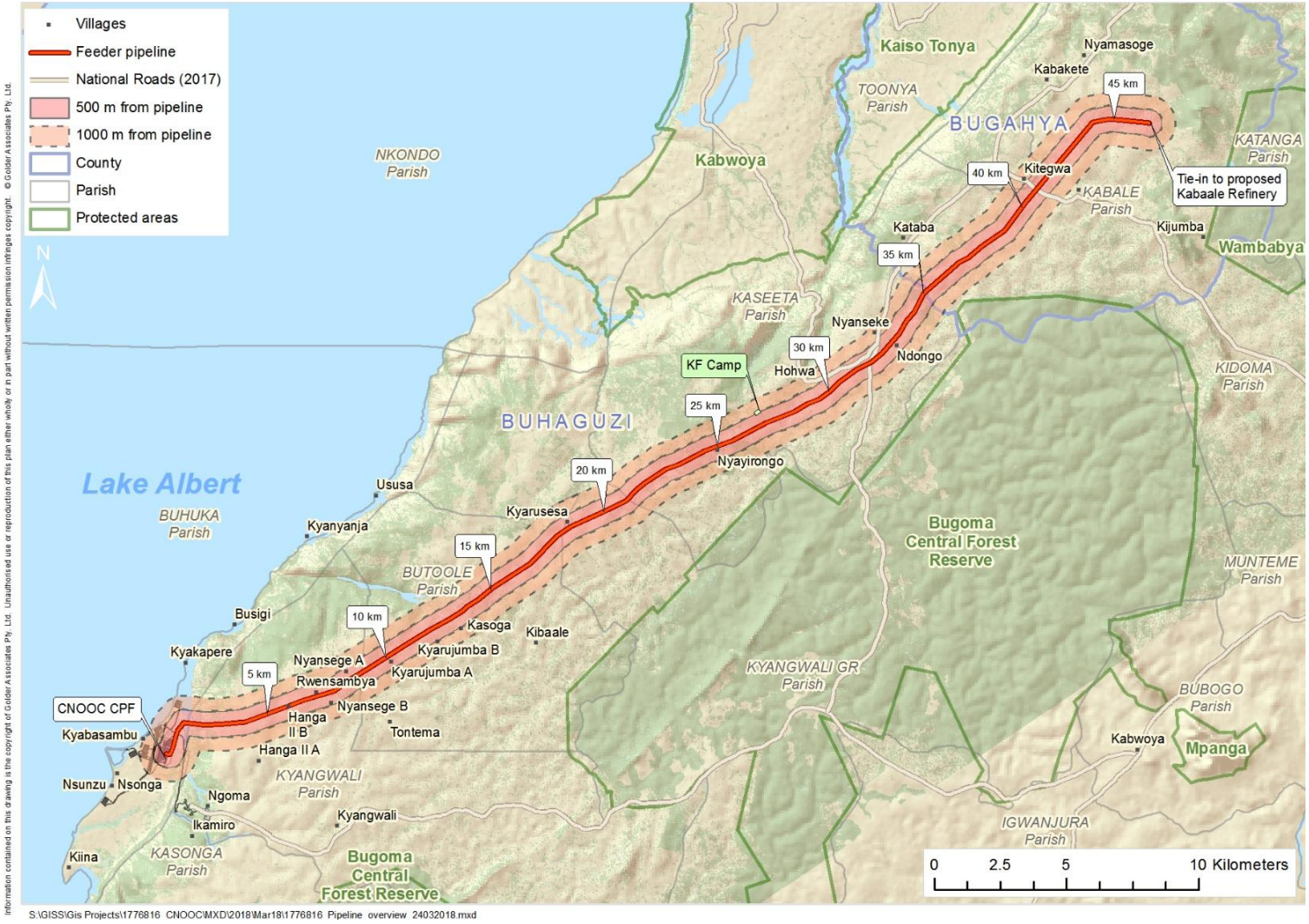

Figure 1: Location of the feeder pipeline

At Kabaale, the Government of Uganda is planning an industrial park which, among other facilities, will include a refinery, associated petrochemical processing factories and airport and related supporting infrastructure. At the delivery point, there will be metering of the crude oil, which will be piped either to the industrial park to feed the refinery and associated petrochemical industry or exported through the East African Crude Oil Pipeline (EACOP), planned from Kabaale to Tanga sea port in Tanzania. The EACOP will be a public - private partnership between the governments of Uganda, Tanzania and oil company(s).

CNOOC's project ends at the delivery point in Kabaale. The industrial park and the EACOP are independent projects that will be planned and developed by others. Apart from their inclusion in the Cumulative Impact Assessment of oil industry activities, they are outside of the scope of the present FP C-ESMP.

3.3 Project activities

The Project construction will take place over 6 months and the following components are relevant to the FP C-ESMP:

- Construction right of way;
- Pipe laying;
- Escarpment crossing;
- Handling of waste rock;
- Construction waste;
- River crossings;
- Bedding material;
- Hydrotesting;
- Reinstatement of right of way; and
- Construction personnel.

The operation and decommissioning phases of these components, as well as all activities related to the feeder pipeline, and ancillary infrastructure (all phases) are addressed separately from this FP C-ESMP.

3.3.1 Construction Right of Way

The construction right of way width will not exceed 30 m except where there may be road crossings or similar intersections with infrastructure or atypical topography. All construction vehicles and equipment will be restricted to this area. Access to the construction site will be along the pipeline right of way, entered and exited at points where existing roads cross the pipeline. Generally, this temporary right of way will not be fenced and ongoing communication with local communities will facilitate safety and discourage their encroachment. Provision will be made for pedestrian access across the trench where there is pedestrian traffic (such as access to schools) or the open trench is too long to walk around.

3.3.2 Pipe Laying

- The construction stages of the export pipeline are shown schematically in Figure 2 and Figure 3, and typically involve:

a) Surveying and clearing of the site;
b) Laying out pipe sections;
c) Welding pipe sections together;
d) Digging the pipeline trench;
e) Construction inspections;
f) Lowering of pipes into the trench;
g) Backfilling the trench and pipeline; and
h) Site restoration.

3.3.3 Escarpment Crossing

The 800 m long (minimum 0.8 m depth) escarpment section of pipeline will be routed up the escarpment which is at a 40º slope. This section may be constructed conventionally, using only tracked equipment, supported by a temporary draw works anchored near the top of the slope. Alternatively, the pipe for this section may be strung and welded in sections at the top of the escarpment, transported down and lowered in after trenching.

Erosion of ditch spoil and topsoil will be minimised by only exposing surfaces while the pipe is laid, preventing prolonged exposure of ditch spoil and stockpiled topsoil. When backfilling the pipeline trench, rock must form the lowest layer, followed by subsoil and then topsoil. To minimise the probability of the trench fill being washed out and the pipe being exposed during a heavy rainfall event:

- The trench will be overfilled so that the top layer has rounded profile to ensure drainage away from the straight-line trench route of the trench;
- The topsoil Will be planted with a fast-growing, hardy grass of creeping habit (e.g. *Cynodon dactylon)* that will bind the soil even under conditions of drought and overgrazing;
- In sections where the trench is climbing or descending a slope, trench Breakers (erosion control packs) will be established within the trench before it is backfilled, and
- The pipeline route will be inspected after each rainfall event and any signs of erosion within the pipeline route will be repaired immediately to prevent emerging erosion channels from growing in size and depth.

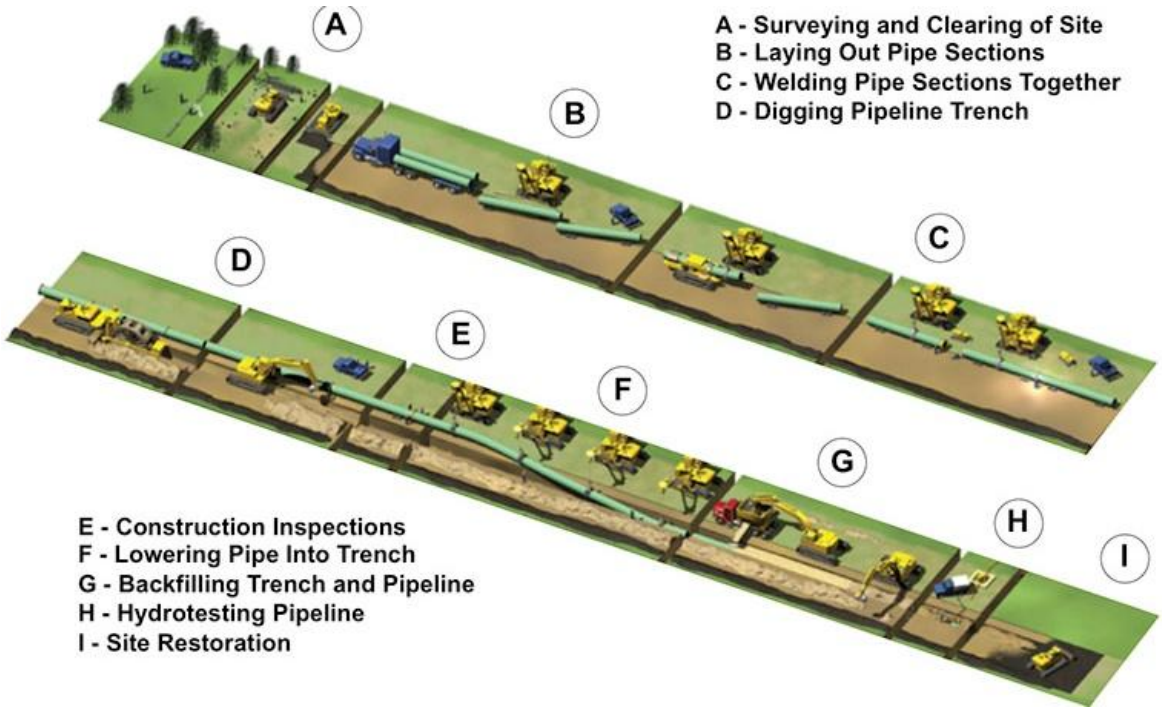

Figure 2: Construction stages of a pipeline [Source: Association of Oil Pipelines (AOPL)]

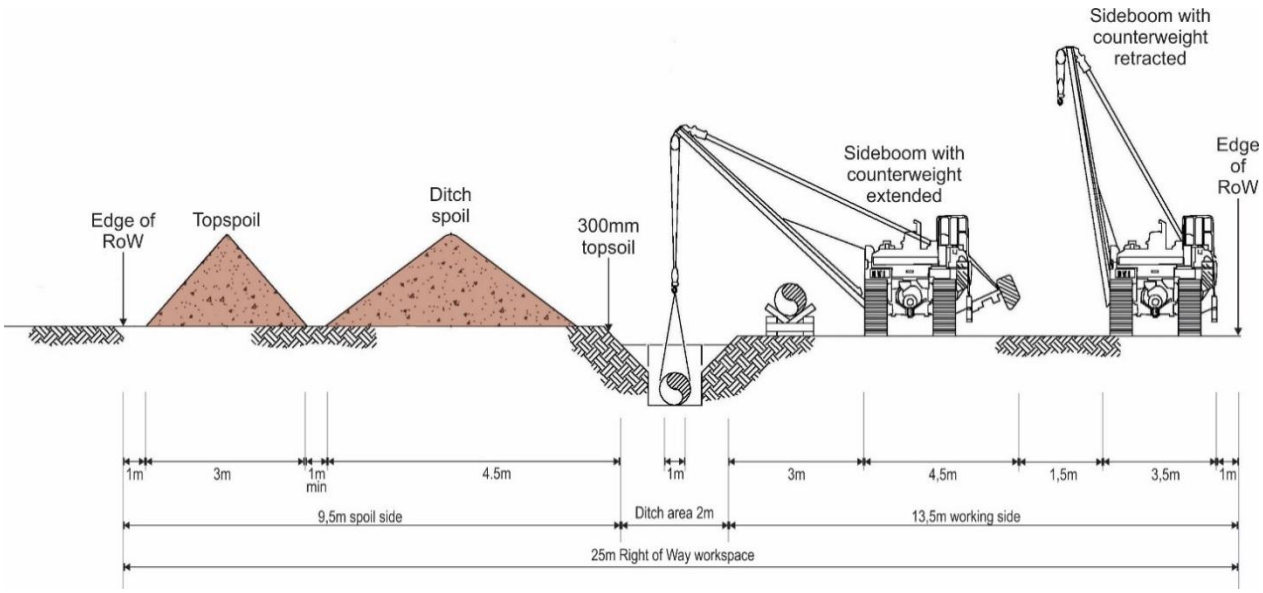

Figure 3: Schematic diagram showing the construction train for a flowline. The construction right of way width does not need to exceed 30 m

3.3.4 Handling of Waste Rock

Waste rock is expected to only be significant in the escarpment section and rock will be returned to the trench during back filling. With permission from the Authorities, rock will be removed to low-impact disposal areas along the RoW which will be identified by the CNOOC Environmental control Officer or as specified in the ESIA.

3.3.5 Generation of Construction Waste

All construction waste management will be undertaken at the Kingfisher Field Development Area camp site. The feeder line has a special construction camp near the middle of the feeder line. Hazardous waste (i.e. waste oil and grease from vehicle maintenance) management will be undertaken at the KFDA site. Non-hazardous waste will be collected, bagged and disposed of at appropriate permitted waste sites. Sufficient provision for staff ablutions will be provided and include ventilated chemical toilets.

3.3.6 River Crossings

Construction across rivers will typically involve the construction of temporary berms, made of soil or aqua bags. Stream flow will be maintained by steel or concrete flume pipes, as required.

3.3.7 Import of Bedding Material

Materials excavated from the trench will be utilized for pipeline bedding and supplemented by material from existing borrow sources along the route. If new borrow pits are required, these will be permitted in accordance with Ugandan legislation.

3.3.8 Hydrotesting, gauging & cleaning

Hyrdotesting refers to a process whereby the completed welded pipeline is pressure tested to confirm its integrity and that no leaks are present. Lake water will be used during this process. The period within which this water is in the pipe will be minimized to avoid the need to add corrosion inhibitors and biocides. Once this hydrotest has been completed, the water will only be disposed of back into Lake Albert after it has been tested to confirm its compliance with the Ugandan effluent standard. The hydrotest water will also be passed through sand filters to remove solids. Solids and filter sand will be disposed of at a certified waste disposal site, as required by law.

3.3.9 Reinstatement of the Right of Way

In order to maintain and patrol the pipeline during operations, the natural ground contours will be reinstated to maintain the right of way. Natural rehabilitation may occur through natural seed beds in the soil and by colonisation from the surrounding area.

3.3.10 Construction Personnel

It is Ugandan labour policy to spread employment benefits fairly and unskilled labour along the pipeline route will be rotated to maximise opportunities in project-affected communities.

4.0 ENVIRONMENTAL CONTEXT

The project area is sensitive. A detailed environmental baseline has been conducted and is described in the ESIA. Key components contributing to the Environmental and social sensitivity of the area are listed below for context:

- The project is located on the shores of Lake Albert on a land terrace known as the Buhuka Flats. This area is bounded on the east by the escarpment which rises over 400 m above the floor of the Flats and is bounded in the west by Lake Albert;
- There are five villages on the Buhuka Flats. These villages follow largely a traditional lifestyle comprising agriculture and fishing. The project is consequently being developed in very close proximity to people. There are established villages in proximity to all components of the project on the Buhuka Flats and certain infrastructure will be constructed immediately adjacent to established housing;
- There are multiple villages in proximity to the feeder pipeline in the section above the escarpment. This section of the pipeline also flows through the land that is largely cultivated for both personal and commercial uses;
- Given the presence of people in close proximity to the project there are many sites of religious, cultural and archaeological importance in the local area;
- Similarly, the waters of the lake, biota within the lake, lakeshore, escarpment and River systems training from the escarpment to the lake are sensitive from an ecological perspective. In the East the Bugoma Forest is regarded as critical habitat that supports a number of red listed species including chimpanzee. A number of red list species have been recorded, or are known to use, components of the ecosystem in proximity to the project; and
- A number of well, developed wetland systems cross the Buhuka Flats. Similarly, a number of streams and small rivers cross the pipeline route.

The overarching environmental sensitivities within the project area are indicated in a sensitivity map that accompanies this EMP. Detailed maps in relation to specific components of the project, the receiving environment and identified areas of sensitivity are contained within the EIA report which should be read in support of the EMP.

5.0 ENVIRONMENTAL MANAGEMENT FRAMEWORK

5.1 Obligations and responsibilities of CNOOC

CNOOC has the overall responsibility for ensuring that the project is undertaken in accordance with the recommendations of this FP C-ESMP. CNOOC is also responsible for updating the FP C-ESMP, as and when necessary, during the life cycle of the Project and must ensure that its contractors adhere to the stipulations of the FP C-ESMP and develop appropriate method work statements.

CNOOC undertakes to manage all Project activities in a manner that minimises adverse effects on the environment and the public, maximises socio-economic benefits for the project area and protects the health and safety of employees, contractors, visitors and the general public. To this end, CNOOC will:

1) The FP C-ESMP shall available to all contractors and a print copy retained in the CNOOC site office. Ensure that the contractors are familiar with the C-ESMP which forms an integral part of the contract documents entered into with the consulting engineers and all contractors;

2) Educate its personnel, contractors and visitors with regard to the safety, health and environmental (SHE) requirements applicable in general to the project;

3) Provide professional staff to give effect to its safety, health and environmental management commitments;

4) Appoint a competent Project Manager to oversee all aspects of the project;

5) Appoint a competent CNOOC Environmental Coordinator (EC) prior to the commencement of construction. The EC will perform regular inspections to monitor compliance with the FP C-ESMP, provide the appropriate level of management within CNOOC with monthly reports on environmental compliance and performance and provide guidance on the remediation of any unplanned environmental impacts. The EC will also motivate and draft any updates to the FP C-ESMP as and when they become necessary;

6) Ensure that internal FP C-ESMP compliance inspections and audits are undertaken by the EC. These inspections and audits will include all activities associated with the CNOOC project site in its entirety, including activities undertaken by CNOOC's contractors and agents;

7) Monitor, evaluate and report performance in safety, health and environmental protection to the relevant management level within CNOOC; and

8) CNOOC will be responsible for implementation of the FP C-ESMP during the project and the contractors for the development of the method work statements.

5.2 Obligations and responsibilities of contractors

Obligations and responsibilities of contractors are outlined below. Contractors shall:

1) Ensure that they are familiar with the FP C-ESMP and adhere to the requirements of this FP C-ESMP and the environmental guidelines and standards contained therein which form part of the contractual commitment with CNOOC and develop appropriate work method statements;

2) Familiarise themselves with the undertakings and requirements relevant to the project activities contained in this FP C-ESMP, educate their personnel accordingly and ensure that such undertakings and requirements are adhered to;

3) Prepare methods statements describing the methods through which compliance with environmental standards will be achieved and submit them to CNOOC for approval. Although CNOOC may comment on any inadequacies in these statements, the contractor will be solely and exclusively responsible in case of non-compliance with the standards contained in this document;

4) Employ techniques, practices and methods that will ensure the fulfilment of these requirements, with specific reference to the control of waste and pollution, the prevention of loss or damage to natural resources and the minimisation of adverse effects on users and holders of neighbouring land and the public in general;

5) Take cognisance of the basic information provided in this FP C-ESMP, but shall also verify the accuracy of any information provided, report any inaccuracies or omissions to CNOOC's Management and Field Environmental Manager and, irrespective of any inaccuracies or omissions, comply with the intentions of the requirements stated in this FP C-ESMP;

6) Undertake any remedial measures within a reasonable period of time following the receipt of a written instruction from CNOOC to do so;

7) Take all reasonable and prudent measures to prevent the occurrence of accidents that may compromise the integrity of the environment and/or the health and safety of all persons on site, of all persons on neighbouring land and of the general public;

8) Report to CNOOC or its representative all incidents, including but not limited to environmental damage, injuries and/or loss of or damage to CNOOC's physical assets or corporate image;

9) In the event of an incident as described in point 8 (above) occurring, present a detailed plan to:

   a) Restore the environmental conditions, to a state similar to that existing before the incident;

   b) Address any injuries caused in a manner satisfactory to the injured party or parties and CNOOC; and

   c) Prevent the future occurrence of similar incidents.

10) Comply with CNOOC's internal environmental and social policies and standards;

11) Cooperate in periodic FP C-ESMP compliance audits by CNOOC, its external auditors and/or relevant government bodies and provide the necessary information to this effect; and

12) Should government authorities believe any activities executed by the contractor cause unacceptable environmental damage, or are inadequate to mitigate environmental damage, the contractor shall immediately consult the competent government authorities and CNOOC and reach an agreement about the remedial measures to be implemented. The measures agreed upon shall be implemented to avoid the occurrence of further damage and to repair any damage that may have occurred. The contractor will be responsible for all relevant costs related to the environmental damage.

5.3 Organisational Structure and Roles

The organisational structure for the environmental management of a large construction project of this nature is set out in Table 5-1 in conjunction with expected roles and responsibilities. Role nomenclature may vary but responsibilities must be allocated appropriately taking into account the organisation's own man power, organisational structure and the contracting arrangements that are ultimately settled upon.

Table 5-1: Organisational Structure and Responsibility

Role	Responsibility
CNOOC Project Manager	CNOOC management is responsible for oversight of project construction. Where a Contractor is appointed for an activity, the CNOOC project manager will liaise with them.
Contractor	■ CNOOC representative, responsible for engineering, procurement, and construction management of the project, including all social and environmental management. ■ In accordance with accepted standards of the international petroleum industry, the Construction Contractor must ensure that they employ up to date techniques, practices, and methods of construction that comply with the appropriate standard. ■ In general, the Contractor must minimise environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources, and minimise effects on surrounding landowners, occupants and the public. ■ The Contractor must regularly keep the CNOOC Environmental Coordinator (EC) informed about any non-conformance in respect of this FP C-ESMP and must advise the EC of actions that will be taken to rectify non-conformance. ■ CNOOC must employ the staff indicated in this table to monitor the Contractor's performance and must ensure that all staff are competent and fully briefed about the nature of the relevant project activity.

Role	Responsibility
	■ CNOOC may manage the Contractor themselves, in which case CNOOC Project Manager / Site Engineer will be responsible for all oversight of the relevant activity.
Site Engineer (Engineer)	■ The Site Engineer is the Contractor's representative on site. ■ The Community Liaison Officer (CLO) and Environmental Site Officer (ESO) must report directly to the Site Engineer.
Contractor (including all sub-contractors)	■ The Contractor is responsible for all construction activities related to the feeder pipeline. ■ The FP C-ESMP must form part of the Contractor's agreement with CNOOC and shall be legally binding. ■ The Contractor must be responsible for the actions and performance of all sub-contractors. ■ The Contractor shall be responsible for ensuring compliance with relevant Ugandan legislation applicable to environmental management. ■ The Contractor must take proactive steps to ensure that the requirements in the FP C-ESMP are met, including, but not be limited to: ▪ Employment of competent and dedicated staff to ensure implementation of the FP C-ESMP. All staff responsible for environmental management of the contract must be approved by CNOOC; ▪ Active participation of environmental management staff in the planning, construction, and re-instatement of works; and ▪ Regular interaction with CNOOC's environmental staff. ■ Staff must be instructed about the relevant environmental sensitivities and the specific measures that each employee must implement to meet the environmental protection and management standards defined by the FP C-ESMP.
CNOOC Environmental Coordinator (EC)	■ The EC must be a senior CNOOC employee with extensive environmental work experience. ■ The EC must liaise with consultants or specialists as needed and monitor environmental performance on the project, as well as review of monthly non-conformance reports. The EC must communicate with the Contractor regarding any significant non-compliance by the Construction Contractor and agree the steps to rectify the non-compliance. ■ The EC must support the ESOs and CLOs and approve the ESO/ CLO monthly reports. ■ The EC can propose FP C-ESMP updates to NEMA and make necessary changes to the FP C-ESMP if approved by NEMA. ■ The EC must oversee the re-instatement of the site and provide final sign-off following acceptable re-instatement. ■ The EC, in conjunction with the CNOOC Liaison Officer – Community and Stakeholder Affairs (LOCSA), must coordinate and manage all necessary communication with the Government (local, provincial, and national).
CNOOC Liaison Officer – Community and Stakeholder Affairs (LOCSA)	■ The LOCSA is a permanent CNOOC officer responsible for all ongoing communications with communities and stakeholders affected by the project. ■ The LOCSA must guide the CLO(s) appointed under the management contractor's staff, where necessary, and must support interaction between the CLO(s) and relevant community leaders.

Role	Responsibility
	■ The LOCSA must review the ESO/ CLO monthly reports and must work with the EC on matters of common interest, including review of non-conformances in the reports. ■ Together with the EC, the LOCSA must initiate, coordinate, and manage all necessary communication with the Government (local, provincial and national).
CNOOC Local Procurement Officer	The CNOOC local procurement officer must implement enterprise and supplier development strategies and tactical plans (including necessary supporting business and governance processes, procedures, systems, and tools) in order to enable CNOOC to meet its preferential procurement and Enterprise and Supplier Development (ESD) targets. The officer must also: ■ Identify, nurture, grow, and leverage internal and external partnerships necessary to successfully execute the local content strategy (particularly as it relates to ESD and local procurement; and ■ Oversee the management of the delivery of business and technical support activities provided to CNOOC's ESD beneficiaries.
Community Liaison Officer (CLO)	■ Community Liaison Officers (CLOs) must be employed full time under CNOOC's staff as the principal interface between communities and the Construction Contractor. They must guide and advise the Construction Contractor with communication and local community issues through ongoing liaison and monitoring of relations with communities, identification of problem areas, and conflict resolution. ■ The CLO(s) must report directly to the Site Engineer. Where advice about community issues is required, the CLO shall notify and request assistance from the LOCSA. ■ The CLO must comply with all requirements for ongoing communication with affected communities. ■ The CLO(s) hired must: ▪ Be trained by CNOOC and LOCSA on all relevant aspects of the project; ▪ Have experience in communication with communities and local and district authorities; ▪ Be fluent in the local Ugandan languages; and ▪ Be able to evaluate the effectiveness of specified social management measures and provide solutions to problems in respect of the implementation of the FP C-ESMP. ■ Responsibilities of the CLO shall be set by CNOOC and may include the following: ▪ Informing communities of upcoming activities and progress with construction; ▪ Organisation of occasional visits to site for District Government and community leaders; ▪ Educating communities about traffic safety where they are near or on project access routes; ▪ Implementation support on labour agreements (among others) through communication with government, village leaders, and community members. ▪ Liaising between CNOOC, communities and NGOs/ service providers implementing community projects; ▪ Communication and management of the Compliments and Complaints Register; ▪ Reporting of transgressions of foreign workers in the communities to the Site Engineer and the EC; and

Role	Responsibility
	▪ Preparation of monthly reports with the ESO.
Environmental Site Officer (ESO)	■ The Environmental Site Officer (ESO) must be appointed under CNOOC's staff and must be employed on a full-time basis. The ESO must perform all tasks necessary to monitor the performance of the contractor with respect to the environmental specifications in the FP C-ESMP. Specific responsibilities of the ESO include: ▪ Ensure the protection of the environment; ▪ Perform all of the day-to-day tasks necessary to monitor the performance of the Contractor(s) with regard to the requirements of the FP C-ESMP; ▪ Liaise with the Site Engineer and the EC in the case of incidents, non-conformance, or any matter where the course of action is unclear; ▪ Verify the accuracy of the information contained in the FP C-ESMP and bring any errors, omissions, or oversights to the attention of CNOOC and EC; ▪ In consultation with the EC, guide all aspects of the re-instatement process as applicable; ▪ Prepare monthly reports with the CLO(s). ■ The ESO must be fully briefed about the project, and receive any necessary training from CNOOC and the EC. Through the Site Engineer, the ESO shall guide and advise the Contractor in respect of compliance with the FP C-ESMP on environmental issues. This will be achieved by ongoing internal coordination meetings, inspections / monitoring of the project, identification of problem areas, and provision of actions plans to avoid environmental damage. ■ The ESO must liaise frequently with the CLO(s) and with the Contractor's environmental staff (ECO). ■ The ESO must have experience in environmental management and be capable of evaluating the effectiveness of specified management measures and be familiar with environmental management techniques. The ESO must be capable of proposing solutions to problems identified in respect of the implementation of the FP C-ESMP.
Specialist Environmental Consultant (Advanced Project Planning and Authorisation)	For activities requiring submissions to NEMA for authorisation, a specialist registered with NEMA as an environmental practitioner must be appointed. The specialist shall be responsible for assembling the necessary team to prepare the required reports for submission to the relevant authorities. The team must be determined based on the nature of the proposed activity and include relevant specialists (e.g. an ecologist, social / resettlement/compensation specialist, and/or a cultural heritage specialist).
Specialist Environmental Consultant (Project Implementation)	■ CNOOC shall employ the services of an Environmental Specialist as needed during project implementation. The specialist must ensure compliance with the requirements of the FP C-ESMP and inform CNOOC if the FP C-ESMP requires amending. This Specialist can be directly employed by CNOOC (where appropriate expertise is available) or contracted, where the expertise is not available, as determined by the Scope of Work prepared by the EC. ■ The Specialist shall report directly to the EC; who will determine the responsibilities of the specialist. The specialist must have a demonstrated track record in the specific environmental aspect under consideration and advise CNOOC of any appropriate actions to be taken and recommend any necessary changes to the FP C-ESMP.
Independent Environmental Auditor	■ The independent environmental auditor must be an experienced environmental expert, familiar with auditing requirements and procedures, appointed to audit the project on completion of construction and for a year thereafter.

Role	Responsibility
	■ The auditor shall prepare a report documenting the effectiveness of environmental management, problem areas, remedial actions proposed and taken, and compliance/non-compliance by the Contractor(s) with the project standards. ■ Prior to the audit the following must be discussed with the EC: specific audit objectives, individuals and organisations that the auditor proposes to meet, documented evidence of performance, and the locations to be visited during the audit. Audit findings and corrective actions must to be reported to NEMA.

5.4 Communication with Government, Communities and Stakeholders

Communication with the Ugandan Government regarding environmental management matters will be via CNOOC's Environmental Coordinator and Liaison Officer – Community and Stakeholder Affairs (LOCSA). Communication with local structures shall be undertaken by the Community Liaison Officer(s) (CLOs) appointed for the construction period, with assistance, where necessary, from the LOCSA.

Communication regarding resettlement and compensation will be undertaken by CNOOC's Community Relations Manager (CRM) or their appointed representatives. Close liaison shall be maintained between CRM and the CLOs in the field. Where necessary, concerns or issues raised by communities and gathered by the CLOs shall be passed on to the CRM team for action.

5.5 Permits and licenses

National laws and regulations require many permits, licences and approvals that could apply to the project or specific activities;

- All applicable approvals, permits, consents, and licenses relating to the environment must be in place prior to any construction activities and must be stored in a location which is easily accessible to appropriate staff on site.

A non-exhaustive guide to permits, licenses, and approvals is provided in APPENDIX B and it is responsibility of CNOOC and contractors to ensure all relevant permits, licenses, and approvals are acquired and complied with.

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The FP C-ESMP incorporates discipline specific management plans that form part of an Environmental Management System (EMS). The plans relate specifically to construction activities of the Feeder Pipeline within the context of environmental and social management. In addition to defined pre-construction planning and general administration and liaison, CNOOC will implement, maintain and update the following plans in accordance with the provisions of the FP C-ESMP:

1) Air Quality management plan;
2) Noise and vibration management plan;
3) Biodiversity management plan
4) Water management plan;
5) Marine works management plan;
6) Traffic management plan;
7) Community health, safety and security management plan;
9) Waste management plan;
10) Cultural heritage management plan;
11) Labour working conditions and employment management plan;
12) Pollution prevention and response management plan;
13) Emergency management plan;
14) Influx management plan.

15) Ecosystem services management plan
8) Visual impact management plan
9) Soil erosion and siltation management plan;
16) Greenhouse gas management plan; and
17) Health management plan.

6.1 Pre-construction planning requirements

Project planning requirements that must be met before construction begins are provided in Table 6-1.

Table 6-1: Project planning requirements. No training is required

Aspect / Activity	Requirements / specifications	Responsibility	Schedule	Performance indicator(s)
Establishment of buffers around sensitive environmental and social resources	No infrastructure to be developed outside the servitude area. Most requirements are spatially defined in the ESIA. If undefined, compliance with the requirement shall be verified in the field when the activity is proposed. No encroachment within sensitive areas without prior approval of CNOOC ECO	Specialist Environmental Consultant CNOOC	Pre-construction - as a basis for licensing of the activity	Independent verification of suitability of project infrastructure location NEMA approval
Preparation of FP C-ESMP appendices for specific projects	Any new activity for which authorisation has been granted by NEMA shall be recorded as an Appendix to this FP C-ESMP. The Appendix shall include details of boundary coordinates of all infrastructure, in tabular form, and a map layer, illustrating the location of project elements. Where specific management measures or monitoring requirements have been recommended for the project, (over and above the general requirements in this document) they shall be set out in the Appendix.	Specialist Environmental Consultant	Pre-construction - as a basis for licensing of the activity	As per requirement
Avoidance of obstruction to surface water flow	All project infrastructure shall be designed to minimise impacts on the natural flow of water. For linear infrastructure, this shall include appropriately sized and positioned drains, culverts etc. Other infrastructure (well pads, borrow pits) shall be located to avoid impact on seasonal and permanent water courses and on storm water drainage in general. Where linear infrastructure must cross seasonal or permanent drainage lines, the appropriate location shall be verified in the activity-specific Appendix to this report, together with any specific impact control measures that are required.	CNOOC All contractors	Pre-construction	No damming of water or obstructions to water flow
Waste generation	■ Review of new waste sources during planning, siting, and design activities to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure;	CNOOC All contractors	Pre-construction and ongoing	■ Design of appropriate and adequate waste storage, handling and disposal

Aspect / Activity	Requirements / specifications	Responsibility	Schedule	Performance indicator(s)
	■ Definition of opportunities for source reduction, as well as reuse and recycling; and ■ Definition of procedures and operational controls for onsite storage.			facilities and procedures to prevent pollution; and ■ Compliance with Waste Management Plan.
Project activities in areas with Cultural resources	The Chance Find Procedure must be updated to manage disturbance of previously unidentified archaeological materials. The CFP must be updated during the lifetime of the Project to provide a course of action if any cultural heritage artefacts are recovered. The CFP must be presented to the relevant local authority and the Department of Museums and Monuments, Ministry of Tourism, Wildlife and Heritage (MTWH) for approval. The CFP must be provided to all contractors and consultants on the Project site during all pre-construction activity and incorporated within the Project's 'site induction' process. It must remain in place for the lifetime of the Project. The CFP must form a component of a detailed Cultural Heritage Management Plan (CHMP) (as required by IFC PS 8).	CNOOC All contractors	Pre-construction and ongoing	■ Approval from Department of Museums and Monuments, Ministry of Tourism, Wildlife and Heritage (MTWH); ■ Documentation of chance finds and CFP implementation; ■ Inclusion of CFP in all relevant contracts. ■ CFP present on site and accessible to all; and ■ CFP included in site inductions.
Project activities in areas with Cultural resources	Additional cultural heritage assessment to document finds of high importance must be concluded prior to commencement of construction, as defined within the cultural heritage specialist study. Recovered artefacts to be housed in the National Museum, or as otherwise authorised by the museum's authority.	CNOOC	Pre-construction	Proof of completion of artefact recovery.
Project activities in areas with Cultural resources	Strategies must be developed for avoidance of potentially highly sensitive archaeological sites between 2- 4 km from the feeder pipeline , failing which additional heritage work to document these finds must be carried out	CNOOC	Pre-construction	Documented strategy and/or additional heritage specialist study with associated recommendations and amendment to management plans to accommodate such recommendations.

Aspect / Activity	Requirements / specifications	Responsibility	Schedule	Performance indicator(s)
Project activities in areas with Cultural resources	Further work must be done to verify archaeological features indicative of settlement/industry by implementing a scheme of shallow, targeted, hand-dug test pits (e.g., 1 m x 1 m in size) through which archaeological potential can established and any further material analysis undertaken.	CNOOC	Pre-construction	Documented implementation and outcome of work scheme.
Project activities in areas with Cultural resources	If sites yield archaeological material, the material must be avoided (preservation in situ is preferred). Where artefacts are discovered during construction activities, “preservation by record” through systematic recording (e.g., archaeological excavation) must occur. The work, where required, must be described in appropriate and detailed work programmes, and specifications must be prepared by a cultural heritage specialist (i.e. suitably qualified person under a licence for archaeological survey as issued by the Ugandan government). In the event of artefact recovery, all materials must be surrendered to the National Museum (Department of Museums and Monuments, Ministry of Tourism, Wildlife and Heritage).	CNOOC	Pre-construction	Documented handling and tracking of archaeological material from source to final destination.
Pollution prevention and response management	The feeder pipeline must be appropriately designed to manage corrosion and potential leakage based on its life span, and include: ■ Compliance with the current GIIP standards, as applicable (e.g. American Petroleum institute standards, see project codes and standards in APPENDIX A); ■ Corrosion protection (cathodic protection and corrosion allowance); ■ Pressure monitoring and automatic pressure loss detectors; ■ Inlet/outlet process safety control Emergency Shut Down (ESD) system; ■ Pipeline leak monitoring system (PLMS) which can detect 1% of designed throughput in 10 minutes; ■ Concrete lining of valve stations; ■ Scour protection where the pipeline crosses rivers; and ■ An insulation jacket for the pipeline as part of the heat tracing.	CNOOC	Pre-construction	■ Documented compliance with current GIIP standards (APPENDIX A), as applicable; and ■ Register of incidents and appropriate response.

Aspect / Activity	Requirements / specifications	Responsibility	Schedule	Performance indicator(s)
Risk assessment	■ All activities, equipment, and areas associated with hazardous material (e.g. in storage, handling, maintenance) must be identified and managed appropriately.	CNOOC	Pre-construction	Documented compliance with: ■ WorleyParsons Oil Spill Planning and Response: Kingfisher Field Development Area, 2017; and ■ KF-FD-RPT-GEN-SA-1007 Safety Case Report REVB.
Ecosystem Services: Food provision	The Resettlement Action Plan (RAP) must be updated with an independent livestock assessment and include: ■ A management component to address impacts to livestock; and ■ A livelihood restoration plan with mitigation strategies for the loss of grazing land.	CNOOC	Pre-construction	Updated RAP addressing livestock and loss of grazing.

6.2 General Administration and Liaison

6.2.1 Administration and General Issues

Table 6-2: Administration and general issues

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria[1]	Monitoring frequency	Additional Reference
1.	Release of contracts	Compliance with FP C-ESMP	This FP C-ESMP shall be available to all contractors working on the feeder pipeline. A print copy shall be available from the CNOOC ECO office at all times	CNOOC	■ Availability of FP C-ESMP at all times; and ■ Proof of communication of such availability to contractors.	Project tendering	■ CUL-QHSE-L2-004 Contractor QHSE Management Procedure; and ■ CUL-QHSE-L2-006 Document Management Procedure.
2.	Compliance with relevant legislation	Compliance with relevant legislation	In all cases, the requirements of Ugandan legislation shall be met (see APPENDIX A for list of relevant Environmental Legislation). Should this not be the case for any reason, CNOOC shall be immediately notified of any breach in the legislation or pending breach. This notification shall be accompanied by full details of the contravention or pending contravention and shall be accompanied by a corrective action plan.	Construction contractor CNOOC	■ Project records; ■ Absence of legal warnings / prosecutions; and ■ ESO/CLO monthly reports with reference to legal non-compliances.	At all times	CUL-QHSE-L2-008 Legal and Other Requirements Management Procedure.
3.	Hiring of Sub-contractors	Compliance with FP C-ESMP	The main contractor shall be responsible for ensuring the compliance of sub-contractors with all aspects of this FP C-ESMP (all references to the Construction Contractor refer to the main contractor and all sub-contractors).	Construction contractor CNOOC	■ Evidence of compliance by all sub-contractors.	At all times	CUL-QHSE-L2-004 Contractor QHSE Management Procedure
4.	Regulating of working period and work hours	Nuisance avoidance	All noisy construction work shall be restricted to between the hours between 06h00 and 18h00 unless otherwise approved by CNOOC following consultation with affected communities. Any approved night work shall not create a nuisance in surrounding communities.	Contractor CNOOC	■ ESO/CLO monthly reports; ■ Absence of complaints; and ■ Contractor's reports on weekly hours worked by personnel.	At all times	
5.	Personnel management	Adequate HSE controls ensuring a safe work environment	A site and project-specific HSE induction shall be drafted prior to commencement of construction and be presented to all employees before they start work on the Project. The EC shall approve the content of the induction. A register shall be kept by the Contractor of all personnel who attend the induction.	Construction contractor Environmental Coordinator CNOOC	■ Inclusion in training / induction programme(s); and ■ Register of attendance of induction.	Prior to employment	
6.	Personnel management	Safe work environment and no unauthorised fires	Smoking is only permitted in designated areas and where there is no risk of starting bush fires (subject to normal safety precautions about flammable materials).	Construction contractor CNOOC	■ Inclusion of smoking areas; and ■ in training / induction programme(s).	At all times.	
7.	Work site employment	Employment of appropriate personnel	Workers shall not be employed at the gate of any work site.	Construction contractor CNOOC	■ No soliciting of work by workers observed at the campsites or work locations.	At all times.	
8.	House-keeping	Safe work environment and no unnecessary pollution	Working areas shall be kept tidy and free of litter at all times.	Construction contractor CNOOC	■ Inclusion in training / induction programme(s); and ■ Absence of litter on site.	At all times	
9.	Implementation of disciplinary procedures	Appropriate correction of non-compliance with FP C-ESMP	Appropriate disciplinary actions shall be taken against offenders by the contractor's management in the event of deliberate non-compliance with any of the specifications in this FP C-ESMP and notification shall be given to the Site Engineer of the actions taken.	Construction contractor CNOOC	■ Evidence of disciplinary actions where deliberate non-compliance is encountered.	At all times	

[1] *Performance indicators are only specified where there may be additional requirements to the verification that the requirement / specification have been met. Additional monitoring requirements are specified under Section 7.0. Note that number of incidents, audit findings etc. shall also be used as indicators of performance.*

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria[1]	Monitoring frequency	Additional Reference
10.	Alcohol and drug use	Safe work environment	■ No alcohol or narcotic substances shall be permitted on site. ■ Continue the CUL policy of prohibiting the possession and use of drugs and alcohol at all of its camps and worksites and those of its contractors and the associated routine search of vehicles and bags to ensure that unauthorised substances are not taken into the camps facilities; and ■ Develop a programme to address education about and management of non-communicable diseases related to use of drugs and alcohol issues	Construction contractor CNOOC	■ Records of disciplinary procedures.	At all times	

6.2.2 Community, Stakeholder and Government engagement

A key management principle during the construction phase of the project shall be that of ensuring that the rights of the inhabitants are not infringed and that all operations are conducted in a manner that is respectful of the local residents and the land and resources that belong to them. Most people are tolerant of short term construction impacts if treated courteously and this shall be a guiding principle of all CNOOC's contractors' activities and relationships with communities. The project area is characterised by the following socio-economic conditions, which shall always be taken into consideration:

- Subsistence living;
- Extreme poverty;
- Strong dependence on local natural resources;
- Lack of health and education facilities, access roads; and
- Very limited employment opportunities.

Note that this section does not contain specifications for liaison in respect of compensation (covered under CNOOC's Compensation and Resettlement Plan).

Table 6-3: Community, Stakeholder and Government engagement.

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
1.	Management of community expectations	Understand and manage community expectations	■ Community leaders and residents may have expectations that CNOOC will play a supporting and developmental role within the area and that the project will have other positive economic benefits. ■ In order to avoid realistic expectations, close communication shall be maintained between local communities and the Community Liaison team (the CNOOC LOCSA and the Community Liaison Officer/s appointed for the construction period) with the objective of clarifying the limitations to CNOOC's involvement in development initiative in project-affected communities. ■ Support work to develop comprehensive land policies. This includes support for Government capacity to do strategic, long-term land use planning that protects small holder farmers and helps balance multiple uses of land, including for oil and gas extraction	LOCSA CLO CNOOC	■ Number and nature of communication initiatives; ■ Minutes of meetings and correspondence indicating the activity of the CLOs and LOCSA; ■ Regular analysis of comments made, issues raised, and complaints registered to improve CNOOC's understanding of community expectations and attitudes towards CNOOC; and ■ Check understanding by discussions with community leaders and residents.	At all times	■ CUL-QHSE-L2-005 Communication Management Procedure; and ■ CUL-QHSE-L3(GE)-006 Stakeholder Engagement Specification ■ Stakeholder Management Plan.
2.	Communication with local leaders	Open and transparent communication with community leaders and residents	Access to land, the integrity of fences, control of bush fires, littering, harassment of domestic and wild animals, sedimentation and contamination of ground and surface waters, damage to landscape and vegetation, nuisance (noise and dust) and all such environmental matters, shall be controlled in the best interests of the local inhabitants and shall, where necessary, be the subject of open communication between the parties.	Construction contractor LOCSA CLO CNOOC	■ Record of compliments / complaints; ■ Number of complaints registered and resolved; ■ Nature of corrective actions taken; and ■ Trends in complaints.	At all times.	

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
3.	Development of communication plan	Formalise a communication plan	Prior to implementation of each activity, CNOOC, in consultation with the LOCSA, shall prepare a Communications Method Statement, based on the principles and procedures, including: ■ Details of stakeholders; ■ Methods of communication at the various levels of government and among local stakeholders; ■ Responsibilities for communication prior to the start of construction and during the construction phase itself; and ■ Details of the messages that are to be communicated to the different interest groups Any local areas where there may be particular sensitivities due to proximity to construction activities shall be highlighted and specific additional measures for liaison with the affected people shall be determined.	Public Affairs Coordinator LOCSA CNOOC	CNOOC-approved Communications Plan Records of communication according to the requirements of the plan.	Pre-construction	
4.	Community consultation	Ongoing communication with communities	Ongoing communication with communities during the construction contract shall be the responsibility of the CLO(s). Where construction teams are active, the frequency of communication with local communities shall be increased. Records of all communication shall be kept and regularly updated.	CLO CNOOC	■ Records of ongoing communication; and ■ Compliments and Complaints Register and necessary follow up actions.	Ongoing	
5.	Communication with local communities	Communication through formal forums	Where CNOOC already has existing communication forums or can re-establish these where they have ceased to function, they shall be considered for use before establishing new forums. Contractors are obligated to source labour via the Community Liaison Forums (CLF) in consultation with CLO(s) and LOCSA.	Public Affairs Coordinator LOCSA CLO CNOOC	■ Use of pre-existing forums, where available.	Ongoing	
6.	Development of complaints register	Documentation of compliments and complaints	Each construction-affected community shall be provided with a Compliments and Complaints Register and informed by the CLOs about how to use it. Information about its use shall also be included in the register itself. Marginally literate and illiterate people are to be encouraged to obtain assistance to use the register or to contact the CLO by phone or meet with the CLO on days when the register is checked. The Register in each community shall be inspected weekly by the CLO as a part of ongoing communication and any complaints are to be resolved within one week. The Register shall be structured in accordance with the requirements set out in the CNOOC Communications Plan.	CLO CNOOC	■ Compliments and Complaints register in each affected community; and ■ Compliments and Complaints and necessary follow up actions.	Register to be provided to local communities prior to the commencement of any construction activity. Weekly check of register by the CLO	
7.	Communication with stakeholders	Assign communication to responsible parties within organisational structure	The Contractor shall not deal directly with surrounding communities about construction-related issues. CNOOC Contractor shall bring to the Construction contractors' attention any issues that are raised by the community that require action. The Construction contractor's ECO shall stay in regular daily contact with the CLO. When requested to do so by the CLO, the Construction contractor shall attend community meetings with the Community Liaison Team to resolve any issues that have arisen.	CNOOC Construction contractor CLO CNOOC	■ Records of communication with communities and resolution of issues; and ■ Meeting and discussion records in the monthly ESO/CLO reports.	Ongoing	
8.	Access to community areas outside the project area	Avoid nuisance to homesteads	Access by all project personnel to homesteads and associated lands outside of the project footprint shall be prohibited, with the exception of local labour.	Construction contractor	Absence of complaints	At all times	

6.3 Procurement of Local Goods and Services Management Plan

CNOOC aligns its project planning to support Uganda's National Content Policy for the Petroleum Subsector in Uganda (Draft; 2017) and will promote competitiveness of Ugandan labour and enterprises in the oil and gas industry and the overall economy.

Table 6-4: Procurement of Local Goods and Services.

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
1.	Procurement of local goods and services	Appropriate procurement of local goods and services	CNOOC must comply with Uganda's National Content Policy for the Petroleum Subsector in Uganda (2017) and will as well : ■ Build the capabilities of Uganda's human resources to effectively participate in the oil and gas subsector; ■ Promote employment of Ugandans in the oil and gas industry; ■ Develop the competitiveness of Ugandan enterprises as suppliers and joint venture partners; ■ Increase the use of locally produced or available goods and services by the oil and gas industry; and ■ Promote research and development and technology transfer. The above will be achieved through the following: ■ All available positions will be publicly advertised; ■ Recruitment and training will be prioritised for Ugandans; ■ Establish operational bases in Uganda; ■ Procurement and contracting procedures will be put in place to benefit Ugandan enterprises and locally available goods and services will be exclusively tendered to Ugandan enterprises whenever these meet CNOOCs established procurement requirements; and ■ Development and implementation of plans for the transfer of technology and knowhow to Ugandan institutions.	Construction Contractor CNOOC Local Procurement Officer CNOOC	■ Records of trainings for Ugandan nationals to participate & enhance capacity to supply goods and services in Oil & Gas industry ■ Records of employment for Ugandan Nationals maintained with CNOOC Human Resource ■ Records on sources of commodities used in CNOOC Operations ■ Records on CNOOC engagement on research, development and technology transfer ■ Local suppliers in service provider list; and ■ Register and percentage of procurement in communities, the District and Province, and Nationally.	Annually	■ Uganda's National Content Policy for the Petroleum Subsector in Uganda 2017; and ■ Labour working condition and employment management plan (Table 6-5).
2.	Procurement of local goods and services	Appropriate procurement of local goods and services	■ The Construction Contractor shall prepare and submit a Local Content Plan to CNOOC for approval, in compliance with Uganda's National Content Policy for the Petroleum Subsector in Uganda 2017 and CNOOC's procedures and guidelines for procurement in Uganda, as described above. The Construction Contractor will comply with this plan and use a specific template as a part of reporting requirements to CNOOC. Detailed records of procurement shall be kept for submission to Ministry of Energy and Mineral Development; ■ The plan will focus on stimulating economic growth throughout the value chain and creating opportunities for local suppliers. Local content, which covers a range of categories, from highly specialised to the commoditised, must be an integral part of tender evaluation criteria in all procurement; ■ Contribute to economic development and infrastructure improvement in the project area, in partnership with central, district and local government; ■ Develop a transparent community development and contribution policy; ■ Encourage the development of government fiscal programmes to manage inflation and support vulnerable groups as required (elderly, single women or child headed households); ■ Develop programmes to manage inflation and support vulnerable groups as required (elderly, single women or child headed households);	Construction Contractor CNOOC Local Procurement Officer CNOOC	■ Prepared and implemented Local Content Plan; and ■ Records of percentage of procurement from local communities, the district, province and nationally.	Pre-construction. Periodic ongoing reporting	■ Uganda's National Content Policy for the Petroleum Subsector in Uganda (Draft; 2017); and ■ Labour working condition and employment management plan (Table 6-5).

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
			■ Support educational and vocational training reform that will develop the range of skills necessary for Uganda to benefit more fully from the sector, including support of science, technology, engineering, and mathematics (STEM) at schools and technical and vocational education and training centres; ■ Maximise local procurement of goods and services. CNOOC has committed to this principle, which will apply to the construction contractor's responsible for the feeder pipeline as well; and ■ Create a detailed and specific local procurement policy (LPP) that will provide benefits to the local community by prioritising sustainable business opportunities with local enterprises, particularly SMMEs. The LPP should set out the steps that will be taken to work with and build the capacity of local suppliers to become more competitive and profitable. This may include the provision of external training and support, aimed at improving their operational, safety, environmental and technical standards to a standard that allows them to compete effectively for contract opportunities. From an internal perspective, the LPP should integrate real measures to identify local procurement opportunities, to communicate the business case to all relevant stakeholders and to put incentives and opportunities in place that will incentivise a supply chain process committed to ethical local procurement.				
3.	Employment/ recruitment of works	Equality	Uganda's Gender policy (2017) will be complied with and gender equality principles will be included in corporate policies to broaden corporate social responsibility and interventions that promote gender equality.	Construction Contractor CNOOC Local Procurement Officer CNOOC	Implementation of policies to facilitate gender equality.	Pre-construction. Periodic ongoing reporting	■ Uganda Gender Policy (2007); and ■ Labour working condition and employment management plan (Table 6-5).
4.	Human Capital Development		■ Identify unskilled construction workers who demonstrate the necessary experience and aptitude for potentially becoming part of a valued workforce, and introduce a directed in-service mentoring and capacity building support programme; ■ Promote STEM at school level by incorporating support to the development of science laboratories at schools, strengthening education in maths and science at schools and the development of well-stocked school libraries as a specific focus area for the CNOOC Community Development Plan; ■ Consider offering bursaries or internships to promising students (refer to discussion on the community development impacts) to build a sustainable and educated future workforce; ■ Collaborate with the Petroleum Authority of Uganda (PAU), which is tasked with establishing, maintaining and operating a National Talent Register for the petroleum sector to ensure that CNOOC contributions in the form of bursaries and scholarships support the development of an appropriately skilled labour force; ■ Support initiatives that will promote and strengthen the levels of competence of master artisans and crafts persons within the Technical Education and Training (TVET) system, and design mechanisms that will support the entrance of female scholars into TVET institutions;	Construction Contractor CNOOC Social performance Manager CNOOC	Implementation of human capital development policy	Pre-construction. Periodic ongoing reporting	

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
			■ Develop and implement training and skills development programmes for the construction workforce to expand the human capital available within the local economy; and ■ Create opportunities for supporting and up-skilling suitable candidates from the temporary unskilled construction workforce so that their experience and competence is built in a manner that aligns their competencies with workforce skills needs.				

6.4 Labour, working condition, and employment management plan

The labour working condition and employment management plan for the construction of the Feeder Pipeline is presented in Table 6-5.

Table 6-5: Labour working condition and employment management plan

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
1.	Recruitment of local labour	Establish a Project Labour Agreement (PLA) in communication with relevant stakeholders	CNOOC (and not the Construction contractor) is to establish a Labour Force Management Plan (LFMP) with the Department of Occupational Safety and Health, Ministry of Gender Labour and Social Development (MGLSD), which shall include the process of recruitment of local labour. The PLA shall be negotiated with the relevant labour union in consultation with relevant authorities and with leaders of the affected communities. Implement the actions set out in the ESIPPS (2015) Labour Force Management Plan (LFMP). Ensure that all contractors employed during the construction phase of the project are aware of and comply with the management framework for casual labour set out in this document.	CNOOC Local Procurement Officer CNOOC	■ Signed Project Labour Agreement; and ■ Records of disputes.	In advance of the construction contract	
2.	Management of labour force	Compliance with PLA and Ugandan labour law	Employment shall be undertaken and managed by the Construction contractor, according to Ugandan labour law and the approved Project Labour Agreement (provided to the Construction contractor by CNOOC). The following should be addressed in the LFMP and implemented by the Construction contractor: ■ The maximum use of local labour during construction on activities where construction machinery could be dispensed with. Where enhanced labour use is practical, it shall be complimented by applicable skills training; ■ Most (65% local and 35% rest of Ugandans) of the unskilled temporary construction jobs should be for the project-affected communities, subject to availability of sufficient workers from these communities who meet with project requirements for employment; ■ Recruitment methods for the project shall be agreed with the local authority and community leaders but shall under no circumstances be *ad hoc* recruitment at the construction sites or personnel camps; and ■ No fees shall be levied for recruitment or preferred status for employment opportunities.	Construction contractor CNOOC Social Performance Manager CNOOC	■ Signed Project Labour Agreement; ■ Maximisation of labour use; ■ Records of CLF, showing unskilled employment from project-affected communities; and ■ Absence of justifiable complaints in the Compliments and Complaints Register.	Pre-construction and ongoing	
3.	Recruitment of unskilled workers	Fair distribution of jobs for unskilled workers	Selection for unskilled employment shall further be based on the procedures developed and agreed by the Community Liaison Forum (CLF), which is intended as a mechanism for identifying and selecting unskilled workers from local communities in a fair and transparent manner.	Construction contractor CNOOC	■ Compliance with LFMP; and ■ Records from Community Liaison Forum.	Ongoing	

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
4.	Recruitment of unskilled workers	Communication of requirements for employment opportunities	In order to maintain a transparent labour recruitment process, the information concerning procedures and eligibility requirements shall be communicated through channels used by local authorities and grass roots community organisations. Details of communication channels shall be included in the Communications Plan.	CNOOC Local Procurement Officer CNOOC Public Affairs Coordinator CNOOC	■ Number and nature of communication initiatives; and ■ Records of communication.	Ongoing	
5.	Management of grievances	Record all grievances	The LFMP shall include a formal Employee Grievance Procedure which provides employees with a mechanism for raising issues with the company without fear of victimisation. Contractors shall ensure that the induction of employees includes instruction on how to use the grievance procedure.	CNOOC Local Procurement Officer Construction contractor CNOOC	■ Grievance Procedure; ■ Induction regarding Grievance Procedure; and ■ Records of grievances and how they were resolved.	Ongoing	
6.	Semi-skilled and skilled employment	Localise employment	Where positions are available for semi-skilled and skilled jobs, the Construction contractor shall coordinate with local authorities and the education sector to identify appropriate local candidates. The Construction contractor shall follow the 'spiral' principle in seeking qualified candidates (i.e. start in local communities, and move outwards to the closest town, province, and finally nationally.	Construction contractor CNOOC	■ Percentage of semi-skilled and skilled employees from local communities, District and Province; and ■ Evidence of use of the 'spiral principle'.	Ongoing.	
7.	Employment of women, disabled and other disadvantaged people	Prioritise previously disadvantaged people	Uganda's Gender policy (2017) will be complied with and gender equality principles will be included in corporate policies to broaden corporate social responsibility and interventions that promote gender equality. The Construction contractor shall weight the award of specific unskilled jobs in favour of women, disabled, and other disadvantaged people wherever practical.	Construction contractor CNOOC	■ Percentage of women, disabled and other disadvantaged people employed.	Ongoing	
8.	Management of workers	Alignment of employee agreements with the PLA	The Contractor shall ensure that agreements with employees (including disciplinary criteria, working conditions, payment of over-time etc.) are in line with the LFMP and are properly understood by all employees.	Construction contractor CNOOC	■ Records of employee briefings and induction.	Ongoing	
9.	Employment of temporary workers	Employees must understand contracts	■ The Contractor shall ensure that contract employees fully understand the temporary nature of their employment contracts; and ■ Train the elected office bearers (LC1's) to ensure that they understand and communicate appropriate information to their communities about the temporary nature of construction employment.	Construction contractor CNOOC	■ Employment Contract and records of employee briefings and induction.	Ongoing	
10.	Employee supervision	Adequate supervision	Construction contractors shall ensure proper supervision of employees at all times, including after-hours where employees are resident on site.	Construction contractor CNOOC	■ Compliance with LFMP and FP C-ESMP requirements.	At all times	
11.	Management of workers	General Employment Requirements	■ Comply with the Occupational Health and Safety standards established by the Government of Uganda and all IFC Performance Standard requirements, including Performance Standard 2, related to labour and working conditions; ■ Implement the actions set out in the Labour Force Management Plan (LFMP). Ensure that all contractors who work on site during the construction phase of the pipeline are aware of, adopt and comply with the Casual Labour recruitment Guidelines and the Labour Force Management Plan. EPC Contractors should be briefed by the lead department before commencement of contract execution to minimise on local employment conflicts;	Social Performance Manager	■ IFC Performance Requirements; and ■ Labour Force Management Plan (LFMP) Standard Requirements.		

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
			■ Preferentially hire local people, in accordance with CNOOC policies and agreements with Government. Advertise employment opportunities within the local fishing villages (local labour market) so that many people are employed who can continue to live with their families as they offer their services to the project. The construction contractor is to prepare an employment strategy for unskilled and skilled labour, and to ensure a focus on pipeline-affected communities, demonstrating that similar numbers of people are employed from each village. This must be revised and reviewed at the commencement of pipeline construction. The distribution of jobs will be monitored as a KPI. A project information centre must be established in each sub-Parish crossed by the pipeline and/or community liaison workers appointed who will serve as a source of information on potential job opportunities and probably as a location for recruitment. This strategy must include procedures to identify and verify the areas in which applicants live, as well as information about experience, skills and potential training needs, as per the requirements set out in the applicable CNOOC procedures; ■ Develop and implement training and skills development programmes in the construction workforce to expand the human capital available within the local economy; and ■ Consider offering bursaries or internships to promising students (refer to discussion on the community development impacts) to build a sustainable and educated future workforce.				
12.	Safety of workers	Safety Requirements	■ Adopt a zero tolerance approach to employees who transgress health and safety rules; ■ Train employees to ensure that they are aware of the requirements of the Occupational Health and Safety standards established by the Government of Uganda and the project health and safety rules; ■ Ensure effective management of camp facilities. Consider a closed camp status; and ■ Properly design the accommodation and other facilities in the personnel camp to prevent overcrowding and need to use rented accommodation available in communities.	Construction contractor CNOOC	■ Records of accidents and corrective actions taken.	Daily	

6.5 Air Quality Management Plan

The air quality management plan for the construction of the Feeder Pipeline is presented in Table 6-6.

Table 6-6: Dust

Ref.	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
1.	Dust generation from construction activities	Dust generation at construction sites	Minimise dust generation and comply to relevant legislation and guidelines	Dust caused by construction activities shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. The contractor shall comply with the Ugandan legal requirements and IFC/ World Bank air quality guidelines for suspended particulates. The upper limit values are as follows: ■ Suspended Particulates (Ugandan daily standard): 200 µg/m^3; ■ PM_{10} (IFC daily standard): 50 µg /m^3; ■ PM_{10} (IFC annual standard): 20 µg/m^3; ■ Respirable particulate matter (<10 µm) (Ugandan daily standard) 100 µg/m^3; ■ Dust fall 600 mg/m^2/day determined in accordance with ASTM D1739 methodology; and ■ CNOOC and the CLO shall demonstrate compliance with the above standard by monitoring of dust fall and ambient concentrations of respirable particulates at receptor points, using passive air quality monitoring devices.	Construction contractor EC ESO CLO CNOOC	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records of observations in ESO/ CLO monthly reports (need for use of formal monitoring equipment to be determined by CLOs and ESO, based on circumstances on site); and ■ No adverse impacts to human health and the environment. ■ Evidence of dust suppression on murram roads during construction	Weekly during the dry season Formal monitoring as specified by CNOOC	World Health Organization (WHO). Air Quality Guidelines Global Update, 2005.
2.	Movement of Mobile Plants within construction corridor	Dust raising from mobile plants supporting the pipeline construction activities	Minimise dust generation	Dust generation from Mobile plants shall be minimised so as not to create nuisance in surrounding communities. Control measures that may be required include sprays, division panels, and direct feed from silo to mixer or dust screens.	Construction contractor EC ESO CNOOC	■ Monitoring of dust levels in environment; ■ Compliance with dust standards at nearest sensitive receptors; ■ Complaints recorded in Compliments and Complaints Register; and ■ No adverse impacts to human health and the environment.	Quartery during the peak plant activities	
3.	Construction within Pipeline corridor	Dust from bulldozers clearing the right of way, backhoes opening and closing the trench, side booms laying the pipe and bulldozers and tractors closing up and reinstating topsoil at work sites	Minimise dust generation	Dust suppression measures to meet standards must include dust suppression along roads (e.g. use of water carts and, where necessary, 'environmentally friendly' surface binding products to achieve dust reduction). Other dust control measures must include covers, or increased moisture content for open storage piles, or controls, including air extraction and treatment through a baghouse or cyclone for material handling sources, such as conveyors and bins. ■ Sufficient watering capacity must be available on site to dampen all exposed work areas and along untarred access roads used by construction traffic, particularly in areas where there are nearby communities; ■ Implement dust suppression measures using water sprays and 'environmentally friendly' surface binder products; ■ Achieve at least 75% dust suppression in areas where people live or where there are other sensitive activities within 50 m of the pipeline right of way or access roads; ■ Ensure that the Contractor maintains sufficient dust damping capacity to control dust at each work site and along the access roads in dry periods; and ■ Visually monitor dust generation daily in order direct water trucks to areas where they are needed.	Construction contractor EC ESO CLO CNOOC	■ Presence of containment units for dust suppression water ■ Complaints registered by communities or employees in the Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records in ESO monthly reports; ■ Monitoring results, when required by the ESO/CLO; and ■ No adverse impacts to human health and the environment.	Weekly during the dry season Formal monitoring as specified by CNOOC	

Ref.	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
4.	Vehicle movement in project areas	Vehicle movement along roads within project area leading to dust raising situation for households within 100m of the pipeline worksite	Minimise dust generation	CNOOC's Land Transportation specification must be enforced in conjunction with the following: ■ Speed limits must be appropriate to minimise dust generation; ■ Driving off road or on unauthorised roads must be prohibited without prior approval from the site supervisor; and ■ Inform local communities of project activities, including use of vehicles on the road network.	Construction contractor EC ESO CLO CNOOC	■ Record of awareness raising within project drivers and neighbouring communities on allowable speed limits; ■ Records of timeous corrective action to resolve complaints; ■ Records in ESO monthly reports; ■ Monitoring results, when required by the ESO/CLO; and ■ Record of communication to communities on proper road use by project personnel	Quarterly during the peak activities	CUL-QHSE-L3(GE)-023 Land Transportation Specification

6.5.1 Hydrocarbon emissions

Table 6-7: Hydrocarbon emissions

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
1.	Point source air emissions from vehicle/equipment operation	Air contamination from combustion sources from vehicle and equipment engines, the use of compressors, pumps, and reciprocating engines	Comply with WHO ambient air quality guidelines	Point source emissions are distinct, immobile, and identifiable sources of air pollutants (e.g. exhaust emissions from diesel/petrol engines). Emissions from point sources must be minimised and controlled according to CNOOC's Air Quality Management Specification (includes control technologies, as well as stack height and emission guidelines) and Good International Industry Practice (GIIP)[2]. The contractor shall comply with the Ugandan legal requirements and the following IFC/ World Bank air quality guidelines: ■ Sulphur Dioxide (IFC daily standard): 20 µg/m^3; ■ Nitrogen dioxide (IFC annual/hour standard): 40 µg/m^3 and 200 µg/m^3; ■ Ozone (IFC 8-hour daily standard): 100 µg/m^3; and ■ Particulate Matter $PM_{2.5}$ (IFC annual/ daily standard): 10 µg/m^3 and 25 µg/m^3. The height of stacks must be at least 5 m higher than other structures located within a radius of 200 m from the stack.	CNOOC Project Manager Contractor EC ESO CNOOC	■ Point source emissions inventory; ■ Documented evidence of regular air quality monitoring; ■ Compliance with air quality guidelines; ■ Resolution of air quality complaints in a timely manner; ■ Regular review and updates of monitoring data, including resolution of information gaps; ■ Monitoring location represents point source; ■ Monitoring time represents maximum point source emission period; ■ Complaints registered by communities or employees in the Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records in ESO monthly reports; and ■ No adverse impacts to human health and the environment.	Daily or as specified by relevant authority.	■ CUL-QHSE-L3(GE)-055 Air Quality Management Specification; ■ CUL-QHSE-L3(GE)-062 Greenhouse Gas Management Specification; ■ Integrated Emission Standard of Air Pollutants (GB16297-1996); and ■ IFC Guidelines (Air Emissions and Ambient Air Quality).
2.	Use of fuel	Energy inefficiency leading to release of air emissions	Reduce air emissions	Energy efficiency must be maximised to minimize air emissions as outlined in CNOOC's energy management specification. Additional measures that should be applied are outlined by the IFC.[3]	CNOOC Project Manager Contractor	■ Compliance with Energy Management Specification and IFC recommendations[3].	Throughout project activities	CUL-QHSE-L3(GE)-063 Energy Management Specification.

[2] IFC Guidelines: Air Emissions and Ambient Air Quality (2007) - http://www.ifc.org/wps/wcm/connect/532ff4804886583ab4d6f66a6515bb18/1-1%2BAir%2BEmissions%2Band%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES

[3] IFC Guidelines: Energy Conservation (2007) - http://www.ifc.org/wps/wcm/connect/c25b18004886583db4eef66a6515bb18/1-2%2BEnergy%2BConservation.pdf?MOD=AJPERES

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
3.	Fugitive emissions from open waste burning, infrastructure	Pollution due to fugitive emissions from open waste burning, infrastructure	Minimise and control fugitive emissions	Fugitive source emissions are air emissions distributed over a wide area (i.e. not confined to a specific release point). CNOOC's Air Quality Management Specification must be complied with and the following must be done to minimise and control these emissions: ■ Open burning of waste material must be prohibited; ■ A procedure must be developed for monitoring of fugitive emissions from infrastructure (e.g. pipes, valves, seals, tanks) and other components with vapour detection equipment, and with subsequent maintenance or replacement of components as needed. The procedure should specify the monitoring frequency and locations, as well as the trigger levels for repairs; ■ Collection of vapours and subsequent treatment by removing VOCs with appropriate control should be implemented; and ■ Ozone depleting substances must be avoided throughout project lifetime.	CNOOC Project Manager Contractor EC ESO	■ Implementation of methods to control and reduce fugitive emissions in design, operation, and maintenance of facilities; ■ presence of appropriate infrastructure to minimise emissions; ■ Implementation of adequate leak detection and repair programmes; and ■ No adverse impacts to human health and the environment.	Throughout project construction activities, with annual records in Audit reports	
4.	Emissions from mobile sources such as vehicles	Impact on air quality	Minimise and control emissions	Emissions from vehicles include CO, NOx, SO_2, PM and VOCs and general control measures that must be implemented are outlined by CNOOCs Air Quality Management Specification. Measures include: ■ Vehicles must be maintained according to manufacturer's recommended maintenance programs; ■ Drivers must be instructed on the benefits of driving practices that reduce both the risk of accidents and fuel consumption; ■ Where feasible, aging vehicles must be replaced by newer more fuel-efficient alternatives. All vehicles must use clean fuels (i.e. low-sulphur fuels or biofuels); and ■ Where feasible, emissions control devices (e.g. catalytic converters) must be installed and maintained in vehicles and mobile machinery.	CNOOC Project Manager Contractor EC ESO	As per Air Quality Management and Land Transportation Specifications, including: ■ Maintenance as per manufacture's requirements; ■ Visual evidence of emissions or exhaust residue; ■ Air Quality complaint; ■ Gaps identified in monitoring data and reporting requirements; and ■ Appropriate Journey management plans.	Inspections before use	■ CUL-QHSE-L3(GE)-055 Air Quality Management Specification; and ■ CUL-QHSE-L3(GE)-023 Land Transportation Specification.

6.6 Noise and Vibration Management Plan

The noise and vibration management plan for the construction of the Feeder Pipeline is presented in Table 6-8.

Table 6-8: Noise and vibration management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
1.	Operation of construction equipment and vehicles Noise from the camp activities (generators) and welding and laying of the pipeline	Elevated noise levels	Minimise and control noise	Noise levels must be controlled in accordance with CNOOC's noise management specification and ensure no detrimental effect on sensitive receptors (e.g. landowners, occupants, employees or the public). The following measures must be implemented: ■ Installation of vibration isolation for mechanical equipment,; ■ Train drivers and equipment operators to minimise unnecessary generation of noise; ■ Train all personnel to be aware of noise nuisance and to minimise their noise footprint in the surrounding community; ■ Re-location of noise sources to less, sensitive areas to take advantage of distance and shielding to reduce noise impacts; ■ Limiting traffic routing through community areas wherever feasible;	Construction contractor CNOOC Project Manager Contractor EC ESO LOCSA CLO	■ Records of vehicle maintenance procedures; ■ Records of trainings administered to drivers & equipment operators ■ Records of strategic placement of noise sources ■ Records of CNOOC transport route plan ■ Records for installation of noise suppression device ■ Evidence of enclosures for stationary noise producers ■ Records of project working times	Daily Quarterly monitoring	■ CUL-QHSE-L3(GE)-056 Noise Management Specification; ■ CUL-QHSE-L3(GE)-023 Land Transportation Specification; and ■ CUL-QHSE-L3(GE)-069 Environmental Monitoring Specification.

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
				■ All vehicles and equipment shall be fitted with noise suppression devices, as appropriate, and operated and maintained as per manufacturer's specifications, instructions, and manuals; ■ Noise producing equipment such as generators, air compressors, etc. should be enclosed in acoustic enclosures. Mufflers, bafflers must also be used where feasible; ■ Ensure that silencers on all vehicles and equipment are properly maintained; ■ Shield the camp generator with acoustic screening. This should provide the necessary acoustic insulation to minimise night time noise to levels of low significance; ■ Noise generating facilities (e.g. well sites, compressors, camps) must be located as far away from noise receptors; ■ Noisy activities must be limited to weekdays (06h00 to 22h00), while non-noise related work can take place at any hour; ■ The noise emission profile (i.e. anticipated noise output) of heavy fleet vehicles, machines, and equipment must be used as a key reason for its selection. Items with high noise emission profiles must not be selected if practical; and ■ Machines and transport equipment must not be allowed to idle, and must be shut- or throttled down to a minimum. ■ Comply with the daytime construction restrictions. Daytime should be defined as daylight hours from 06:00 - 18:00; ■ Flag any schools, clinics or places of worship within 100m - 200 m of the construction RoW and monitor noise at these locations. If necessary, take measures to minimise the effect of the noisiest activities by timing them to avoid critical periods in the school/worship calendar; ■ Ensure that silencers on all vehicles and equipment are properly maintained; ■ Communicate with the families in proximity to the right of way to ensure that there is an understanding of the temporary nature of the noise and the expected schedules for construction; ■ Use the pipeline construction as an educational opportunity for school children in the communities along the pipeline; ■ In areas where blasting is necessary, advise surrounding communities well in advance of the blast schedules. If any blasting is required within 200 m of households, undertake photograph surveys of the buildings before and after blasting and measure blast shock; and ■ Shield the camp generator with acoustic screening. This should provide the necessary acoustic insulation to minimise night time noise to levels of low significance		■ Records of noise monitoring at flagged sensitive receptors ■ Record of noise silencer maintainance schedule ■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records of monitoring in ESO weekly and monthly reports; ■ Comprehensive inventory of sensitive noise receptors within influence areas (e.g. wildlife areas, protected species, and residents etc.); ■ Compliance with CNOOC's noise management specification; and ■ Registers of training (including type of training, date and name). ■ Record of communication with communities regarding noise emissions (blasting)		

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
2.	Generation of noise at sensitive receptors such as schools	Elevated noise levels beyond compliance	Compliance with relevant legislation and international guidelines	■ Monitoring data should be analysed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken. Reference should be made to the 2007 International Finance Cooperation General Environmental, Health, and Safety (EHS) Guidelines. ■ Noise monitoring must be done at schools within 100 m - 200 m of noisy activities. If necessary, take measures to minimise the effect of the noisiest activities by timing them to avoid critical periods in the school day. ■ In cases where there is evidence of noise nuisance based on field observations, or based on complaints received, measurements must be taken to verify noise levels being generated by construction work and necessary corrective action must be undertaken. ■ Noise monitoring must be designed and conducted by trained specialists. ■ Monitoring periods must be sufficient for statistical analysis (e.g. over 48 hours with the use of noise monitors capable of logging data continuously). ■ Monitors should be located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface (e.g. wall). ■ The Construction contractor must comply with the World Bank guideline for daytime noise affecting communities (Laeq of 55 dBA, measured at the receiver) and activity not result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site. [4]	Construction contractor CNOOC Project Manager Contractor EC ESO	■ Complaints registered by communities or employees in the Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records in ESO monthly reports; ■ Monitoring results, when required by the ESO/CLO; ■ Comprehensive inventory of sensitive noise receptors within influence areas (e.g. wildlife areas, protected species, and residents etc.); ■ Compliance with CNOOC's noise management Specification; and ■ Use of a Type 1 or 2 sound level meter that comply with all appropriate and current IEC standards[5].	Quarterly monitoring Data to feed into annual audits	■ CUL-QHSE-L3(GE)-056 Noise Management Specification; and ■ CUL-QHSE-L3(GE)-069 Environmental Monitoring Specification.

[4] Guidelines for Community Noise, World Health Organization (WHO), 1999.

[5] International Electrotechnical Commission (IEC) standards are used to obtain accurate and repeatable noise measurements.

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
4.	Blasting along the escarpment	Potential for damage to structure, creating high impact noise nuisance for residents in close proximity to sections of pipeline that require blasting (e.g. on the escarpment)	Avoid damage, injuries and nuisance effects	In areas where blasting is necessary, inform surrounding communities well in advance of the blasting procedures and schedules. If any short hole blasting is required within 200 m of households, undertake photograph surveys of the buildings before and after blasting and measure blast shock. Ensure absence of people and livestock within a 200 m buffer area of a short hole blasting by blowing blast sirens and driving through the buffer area prior to each blast. The following measures are recommended to mitigate the impacts of blasting on local residents: ■ Blasts should be designed so that: ▪ Ground vibration levels do not exceed 10 mm/s (particle acceleration) at off-site structures; and ▪ The air over-pressure level does not exceed 130 dB at the blast and 115 dB at any receptor site. ■ Vibration and air over-pressure should be monitored at sensitive areas and the measured values should be considered in the design of subsequent blasts; ■ Blasting days and times of blasting must be established and communicated to local residents; ■ Ensure that the correct design relationship exists between burden, spacing and hole diameter; ■ Ensure that the maximum amount of explosive on any one detonator delay interval (the maximum instantaneous charge) is optimized by considering a reduction in the: ▪ Number of holes per detonator delay interval; ▪ Instantaneous charge by in-hole delay techniques; and ▪ Borehole depth and diameter. ■ Be aware that the perception of blasting events occurs at levels of vibration well below those that can cause structural damage, but nevertheless at levels that can cause concern amongst residents near the blasting; and ■ Consider that relatively small changes in blast design can produce noticeable differences in effects experienced by local residents. Complaints are often made in response to changes in the effects experienced rather than their absolute value.	Construction contractor CNOOC Project Manager Contractor EC ESO LOCSA CLO	■ Records of information notices prior to blasting activities ■ Records of vibration measurements during blasting activities ■ Schedule detailing blasting activities, timelines ■ Monitoring records for vibration and air-over pressure for sensitive areas ■ Records of blasting procedures detailing design relationship between burden, spacing and hole diameter ■ Records of complaints from residents/community members within vicinity of the blasting activities	Prior to and during every blast with annual monitoring records	
6.	Construction activities within community areas	Loss of agricultural land Damage to community structures	Minimize damage to community infrastructure and agriculture	Should the construction activities result in losses to the adjacent landowners via agricultural losses or structural damages caused by the construction activities, the compensation and grievance processes outlined in the Resettlement Action Plan must be followed and implemented.	Construction contractor CNOOC Project Manager	■ Grievance procedure; ■ RAP compensation agreement; and ■ Resolution of grievances lodged within 30 days.	Ongoing – throughout the project construction period	RAP compensation and grievance procedures .

6.7 Biodiversity Management Plan

The biodiversity management plan for the construction of the Feeder Pipeline is presented in Table 6-9 to Table 6-11.

Table 6-9: General requirements

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
1.	Construction activities within previously undiscovered biodiversity hotspots	Potential damage to biodiversity along the pipeline	Avoid biodiversity hotspots	Where small areas of high biodiversity are encountered during surveying or bush clearing for roads or other infrastructure, that were not identified in pre-construction studies, consideration must be given to slight re-alignment of the infrastructure to avoid these areas.	Construction contractor CNOOC Environmental Coordinator	■ Records of ECO training to identify hotspots; ■ Records of ECO accompanying surveyors and dozer operators during bush clearing; and ■ Records of biodiversity hotspots and avoidance measures taken.	During the construction phase of the project	
2.	Collecting or harvesting fruits, vegetables, grains and any other plant material	Unsustainable use of biodiversity resources, putting pressure on flora and fauna due to consumption	Local produce industry must not be negatively impacted.	The harvesting or collection of fruits, vegetables, grains and other plant material by CNOOC employees or the Contractor for use or sale is not allowed.	Construction contractor ESO CLO CNOOC	■ Inclusion of prohibition in training / induction programme(s) and contractor tool box talks; ■ Absence of evidence of plant harvesting by employees; and ■ Evidence of disciplinary procedures in the event of non-compliance.	Throughout the project construction period	
3.	Hunting or harassing wild animals – including fishing	Unsustainable use of biodiversity resources, putting pressure on flora and fauna due to consumption	Local meat industry must not be negatively impacted	■ Hunting, harassing, or capturing of wild animals for sale as pets or food is not allowed. ■ The purchase of wild animals for food by CNOOC employees and Contactors is not allowed.	Construction contractor Environmental Coordinator CNOOC	■ Inclusion of prohibition in training / induction programme(s) and contractor tool box talks; and ■ Absence of evidence of hunting or animal harassment by employees.	Throughout the project construction period	
4.	Pipeline installation	Interfering with Fauna movement due to clearing vegetation, pipeline installation and human presence along the project corridor	Minimise animal injury or mortality	■ Ensure no spillage of waste food on or near sites and ensure food waste is stored in wildlife proof bins/pits fitted with appropriate covers. ■ Report all relevant wildlife and livestock incidents so that proper monitoring of the effectiveness of mitigations can occur and necessary improvements implemented. ■ Use Journey Management procedures appropriate to local wildlife and livestock populations. Protective measures may include speed restrictions, controls on night driving, and proper signage.	Construction contractor Environmental Coordinator ESO CNOOC	■ Presence of fauna on site; ■ Compliance with journey management plans; ■ Results of inspections by EC; ■ Correspondence with relevant authorities; and ■ Evidence of disciplinary procedures in the event of non-compliance.	Throughout the project construction period	
5.	Changes to approved alignments	Alignment changes have potential to impact on sensitive habitats	Minimise bush clearing	If an approved route needs to be changed, CNOOC must be notified in advance. The notification shall include a motivation for the proposed route change. No changes shall be agreed to that, in the opinion of CNOOC, result in an unacceptable environmental impact. Any change shall be certified by the EC.	Construction contractor CNOOC Environmental Coordinator	■ Documented record of notification and any approval(s).	Prior to route change	
6.	Intentional/unintentional introduction of alien species into the project area	Alien vegetation infestation from vegetation clearing along pipeline corridor	Minimise alien vegetation	CNOOC shall prepare a booklet of alien plants, annotated with photographs, as a basis for identification and control by the Construction contractor. The list of alien plants shall serve as a basis for alien plant control, to be updated from time to time, as necessary. The booklet shall be available on site at CNOOC's and Construction contractors' site offices and shall be provided to the ECO/ESOs. If alien vegetation establishes itself, it shall be selectively removed. Alien species monitoring and control shall be handed over to the SPT monitoring team after the contractor has demobilised.	Environmental Coordinator Contractor ESO CNOOC	■ Booklet must include all alien plants that have been identified in the relevant area and it must be up to date; and ■ Availability of copies of booklet at construction sites. ■ Records of alien plant removal. Record of handover.	Prior to establishment on site Ongoing monitoring for invasive removal throughout construction	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
7.	Working in areas with animals	Animal injury/mortality	Minimise animal mortality	An education programme must be implemented with appropriate awareness communication to all relevant personnel.	Environmental Coordinator CNOOC	Record of awareness training with specific reference to avoidance of animal injury/mortality.	Six-monthly and as needed	
8.	Operation of heavy equipment and creating nuisance in the project corridor	Disturbance to Sensitive habitat along the escarpment portion of the pipeline corridor	Minimise disturbance to sensitive habitats	CNOOC's Aquatic and Terrestrial Habitat Management specification must be enforced in conjunction with the following: ■ Sensitive habitat areas (including protected areas) must be clearly identified through signage and avoided during all phases of the project; ■ Establishment of a relationship and close coordination with external monitoring agencies and entities; ■ Construction activities must avoid natural drainage areas (i.e. riparian areas) as there are sensitive habitats and must be avoided wherever practical; and ■ Appropriate buffers must be established and maintained between project activities along water courses and bodies that comply with Ugandan national regulations and GIIP.	Construction contractor Environmental Coordinator ESO CNOOC	■ Regular inspections and monitoring plans for flora and fauna management as part of the site and activity specific management systems and plans; ■ Specific or targeted monitoring annually or as advised by an experienced external consultant; ■ Appropriate signage and mapping of sensitive habitat areas; ■ Co-operation with external monitoring agencies; ■ Documented training and compliance of personnel; and ■ Personnel awareness of sensitive areas and their importance.	Bi-annually	■ CUL-QHSE-L3(GE)-057 Biodiversity Management Specification; and ■ CUL-QHSE-L3(GE)-058 Aquatic and Terrestrial Habitat Management Specification.

6.7.1 Habitats and Ecosystem integrity

Table 6-10: Escarpment Vegetation Corridors

Ref	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Vegetation clearing during pipeline construction activities	Altering the composition of the ecosystem through which the pipeline traverses Increased risk of erosion	Minimise impacts on the escarpment vegetation corridor	Prepare a detailed method statement for the construction and rehabilitation of the pipeline in the steep section of the escarpment vegetation corridor. The method statement is to address the following: ■ Pipeline construction activities, workers, machinery and laydown areas must be restricted to the 30 m right of way to minimize land-take, habitat loss and soil erosion, except where there may be pipeline crossings or similar intersections with infrastructure or atypical topography; ■ Access restrictions (to minimise habitat disturbance to the absolute minimum for safe construction); ■ Topsoil stripping and stockpiling (to be stripped to recover as a basis for effective rehabilitation and located in safe temporary storage area); ■ Blasting restrictions and management; ■ Rock spoil disposal (to be located above the escarpment in an area where there is least additional habitat damage); ■ Trench breakers (to prevent sub-surface channelling of water down the trench); ■ Topsoil reinstatement; ■ Drainage control berms and other erosion control measures; ■ Rehabilitation of the buried pipeline as construction progresses. Grass cover should be re-established as a priority, using suitable indigenous pioneer species that will establish cover quickly. Well-established grass cover will provide erosion protection; and ■ Monitoring and maintenance.	Construction contractor Environmental Coordinator ESO CNOOC	■ Measurements of the corridor width during construction ■ Presence of site restrictions for areas flagged as sensitive ■ Records and specifications of location used for rock disposal ■ Presence of trench breakers, drainage control berms ■ Environmental audit reports.	Throughout surveying, bush clearing, construction and rehabilitation	
	Vegetation clearing during pipeline construction activities	Replacement of originally vegetated areas with pipeline Infrastructure	Minimise impact of project footprint and Infrastructure	■ Monitor bush clearing to ensure that clearing for the construction right of way does not exceed the specified width of 30 m, except where there may be road/pipeline crossings or similar intersections with infrastructure or atypical topography. ■ Avoid small areas of sensitive habitat (such as large indigenous trees) by micro-adjustments to the pipeline alignment, once the centreline is pegged. Decisions in this regard should be informed by a competent ecologist. ■ Plan construction access roads to minimise their total length. Limit vehicle access to the construction right of way and other existing road networks, wherever feasible ■ Establish any lay-down areas that are not within the 30-m construction right of way well away from the Bugoma Central Forest reserve (CFR). ■ Enforce measures to ensure that poaching for bushmeat is prevented, both by construction staff and migrants who may set up residence in the vicinity of the construction camp (other management measures to discourage migrants are described in the Influx Management Plan. ■ Compile a photographic georeferenced pre-construction, construction and post-construction record of the entire alignment.	Construction contractor Environmental Coordinator CNOOC	■ Measurements of the corridor width during construction ■ Record of areas avoided due to sensitivity ■ Construction access plan record ■ Geographical location of the site lay-down area ■ Record of activities undertaken to enforce influx management plan in regards to poaching ■ Record of photographic evidence during construction and post construction of entire alignment ■ Environmental audit reports.	Throughout surveying, bush clearing, construction and rehabilitation Monitoring of influx annually	■ Influx Management Plan (6.15).

Ref	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Vehicle movement within and in close proximity to sensitive habitats	Physical hazards that may lead to animal mortality	Minimise physical hazards	■ Restrict vehicle speeds on roads. ■ Use buses to transport workers to minimize traffic. ■ Restrict construction traffic to daylight hours to reduce the risk of animal mortality, except in emergency situations. ■ Install under road crossing structures (for example, culverts) suitable for amphibians and small reptiles, along the construction access road to reduce road mortalities and improve habitat connectivity. ■ Minimise the length of open trench. Monitor open trenches daily (in the early morning) and remove animals trapped in the trench.	Construction contractor Environmental Coordinator ESO CNOOC	■ Tachometer records; ■ Traffic counts, daytime and night-time; and ■ Physical inspection.	Monthly monitoring records that feed into annual audit report	
	Influx of people to the region	Pressure on biodiversity resources	Minimise adverse impact of people on biodiversity	■ Preferentially hire from the local communities to minimise regional human population growth and the associated increase in human encroachment into valued component habitat and direct mortality from illegal hunting. ■ Prohibit hunting or collection of flora and fauna by staff and/or contractors. ■ Prohibit project personnel from access to the lake shore, the escarpment area outside of the construction right of way and the Bugoma Central Forest Reserve. ■ Control the spread of diseases and pests by proper cleaning, disinfecting, and/or sterilizing of vehicles and equipment. To this end, for example, CNOOC must implement widely accepted protocols aimed at minimising the risk of transmitting amphibian chytrid fungus disease in/or around the Project site on footwear, vehicles, field equipment. ■ Undertake mandatory environmental induction training for all workers and contractors that highlights conservation issues and species-specific sensitivities. Update this training regularly by means of tool box talks for contract personnel.	Construction contractor Environmental Coordinator Construction contractor CNOOC Project Manager EC ESO LOCSA CLO CNOOC	■ Employment records; ■ Records of consultation with communities and authorities; ■ Records of EHS training of contractor and CNOOC personnel; and ■ Records of disciplinary actions.	Annually	
	Noise generation	Noise effects on animals	Minimise impact of noise on animals	■ Mitigate noise in accordance with requirements to minimize human nuisance. This will benefit animals equally (refer to Noise and Vibration Management plan. ■ Limit hours of construction to avoid impacts on nocturnal species. ■ Train all personnel, and vehicle and equipment operators in particular, to minimize unnecessary noise. ■ Monitor noise impact on wild animals near the construction right of way. Should the ESO find previously unidentified sites of high sensitivity within 200 m of the construction right of way (e.g.: breeding sites of raptors, bat roosting sites), introduce specific measures to manage noise, vibration, and other nuisances. ■ Minimise higher frequency noises.	Construction contractor Environmental Coordinator CNOOC	■ Remain within standards listed in Table 6-8.	Noise monitoring to be taken bi-annually	
	Vibration	Damage to structures Impact from high impact noise	Minimise impacts of blasting on local residents	■ Design and execute blasts to meet acceptable air blast, ground vibration and fly rock criteria as listed in the Noise and Vibration Management plan. ■ Monitor each blast and use results to design subsequent blasts.	Construction contractor Blasting contractor CLO ESO CNOOC	■ No damage to build structures of local residents; and ■ No fly rock injuries or damage.	Every blast Monitoring to capture before and after evidence of neighbouring structures	

Ref	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Opening up areas for pipeline installation and use of lights at project sites	Project Light interference on fauna	Minimise impact of light on animals	■ Enforce the prohibition on night time work along the pipeline right of way, except in the case of emergency situations. ■ Use the minimum number and brightness of lights required for safety at the construction camp. Use of movement-activated boundary lighting rather than continuous lighting is recommended. ■ Use narrow spectrum bulbs to minimise the range of species affected by lighting (for example, longer wave length red or yellow bulbs rather than “natural” or white light).	Construction contractor Environmental Coordinator ESO CNOOC	■ Record showing the schedule of activities, indicating timelines ■ No complaints from local residents.	Prior to establishment on site, thereafter at all times	
	Rehabilitation works	Creation of hard pans Introduction of invasive species Soil contamination	Sustainable rehabilitation	■ Strip topsoil to a depth of 300 mm along the construction right of way and at the personnel camp and any laydown areas unless otherwise instructed by the ESO. Train dozer operators to strip topsoil to the specified depth and separately stockpile it from subsoil. Monitor topsoil stripping depth to ensure compliance with the specification. ■ Remove and destroy any invasive alien vegetation encountered along the construction right of way. ■ In the event that rock is excavated from the pipeline trench, which cannot be returned into the trench, identify a suitable rock spoil area that minimizes damage to natural habitats. ■ Ensure slight mounding over the pipeline trench with backfill and topsoil to allow for settlement over time and to avoid channelling of storm water along the pipeline trench. ■ De-compact the construction right of way and reinstate topsoil from the stockpiles after construction is complete. Implement sequential topsoil restoration after the pipe is laid in order to minimize erosion risk and to encourage rapid rehabilitation from the natural seed beds in the soil. ■ Remove all foundations and other buried and surface infrastructure from the construction camp and laydown areas. Remediate any contaminated soils. De-compact subsoils and replace topsoil. ■ Decontaminate any hydrocarbon-contaminated soils using bioremediation. ■ Prepare a method statement for active rehabilitation measures in any areas where slope or other factors may prevent recovery of a stable vegetation cover from the natural seed beds in the soil. This may include seeding with locally indigenous grasses and various forms of slope protection. ■ Monitor rehabilitation in areas where cultivation is not re-established. Develop a programme for management and removal of any alien invasive weeds. ■ Establish (prior to construction) an environment fund specifically intended for continued restoration of the area after the warranty period of the EPC contractor has expired.	Pedologist Construction contractor Environmental Coordinator ESO CNOOC	■ Records of removal and destruction of invasive species ■ Evidence of re-instatement of topsoil in pipeline ROW ■ Record of method statement streamlining rehabilitation measures ■ Monitoring records of rehabilitated areas ■ Environmental audit report.	Annual monitoring for finished sections of the pipeline corridor	
	Dust generation	Dust nuisance on biodiversity	Minimise impact of dust on animals and plants	■ Develop and adhere to airborne pollutant critical load benchmarks for terrestrial and/or aquatic system impacts for the Project. ■ Use dust control methods to minimize impacts on plant and animal species adjacent to the right of way. Measures are to include, as necessary, covers, water suppression, or increased moisture content for open materials stock piles; and water suppression along the construction access roads.	Construction contractor Environmental Coordinator ESO CNOOC	■ Meet air quality criteria listed in the Air Quality Management Plan.	Until end of Construction contractor warranty period	

Ref	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Waste Management	Waste impact on flora & fauna	Minimise impact of waste on animals	■ Ensure that no waste whatsoever, including construction waste is dumped in watercourses or at any site that impacts on villagers or their land use; and ■ Ensure that the use of water does not disturb public water availability and that sources of water are carefully selected.	Construction contractor Environmental Coordinator ESO CNOOC	■ No litter; ■ No offensive odours; and ■ No infestation of flies, rats, gulls or other scavengers.	Bi-annual monitoring	
	Project induced in-migration	Indirect effects of project induced in-migration on ecological integrity Potential for increased incursions (for wood, harvesting, hunting & encroachment) into BCFR	Minimise indirect impacts on the Bugoma Central Forest Reserve (BCFR)	■ Implement the measures to minimize migration into the area recommended in the Influx Management Strategy and Framework Plan for the project. While the measures may reduce the amount of induced settlement, it is unlikely that in-migration could be fully halted; and ■ Increase monitoring of population changes in the RSA and, in particular, any incursions into the BCFR by settlement or people harvesting natural resources. A strategy for this initiative is discussed in further detail in Chapter 17, Cumulative Impacts. ■ CNOOC will probe materials sources for products brought to their sites by suppliers. Timber and food products will be rejected if they are obtained from sensitive protected areas, especially in BCFR ■ No food grown or product made on degraded forest, wetland, river bank or lake shore land will be consumed by the project. Site visits to sources of these products consumed by the project will be undertaken by the CNOOC environment & procurement team prior to processing orders.	Construction contractor Environmental Coordinator ESO CNOOC	■ Records of source verification for products consumed by the project ■ Record of suppliers detailing geographical location of their warehouses and sources of products ■	Bi-annually	

Table 6-11: Bugoma Central Forest Reserve (CFR)

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Access to project site through BCFR	Exposure of sensitive habitats in BCFR to human activities	Avoid Bugoma CFR	■ The Bugoma Central Forest Reserve (Bugoma CFR) is widely recognised as a biodiversity hotspot and constitutes a network and corridor for critical biodiversity sites in Uganda. The R5 must be de-listed from the proposed oil road upgrades and CNOOC must use the P1 as the major haul road during the construction phase and, if upgraded in time, the R7.	Construction contractor Environmental Coordinator CNOOC	■ Verify use of P1 and R7 instead of R5.	Annually	
	Transport of project materials near BCFR	Impacts due to exposure of animals to traffic hazards in BCFR	Avoid animal injury along transportation route	■ Limit vehicle speeds to 40 km/h along the P1 road in the section from Mpanga to Nsozi. ■ Monitor vehicle speeds and fine drivers who do not comply with the speed limit. ■ Prohibit transport of construction materials near the forest at night. ■ Widen the P1, where necessary, on the non-forest side of the road to minimise forest habitat loss. ■ Ensure that all EPC contract transporters are fully aware of the risks to wildlife in the Bugoma Forest.	Construction contractor Environmental Coordinator CNOOC	■ Tachograph records; and ■ Records of training and standing instructions.	Annually	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Influx of people to the area	Increase risk of human-wildlife interaction	Monitor influx	■ Increase monitoring of population changes in the CHAA, particularly incursions into the BCFR by settlement or people harvesting natural resources. A strategy for this initiative is discussed in further detail in Chapter 17 of the ESIA, Cumulative Impacts as well as Section 5.11.2 and 5.16 in this ESMP. ■ Implement the Influx Management Plan	Construction contractor Environmental Coordinator CNOOC	■ Monitoring records.	Annually	

6.7.2 Wetlands and drainage lines

Table 6-12: Wetlands and drainage lines

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Construction of access roads, working along stream banks, Wetland crossing and, Buffer areas Use of fill material to provide footing for construction Working in wetlands	Disturbance to sensitive riparian habitat Potential contamination from hazardous material storage Impacts on flow connectivity from use of fill material to provide footing for construction Erosion impacts on wetlands from construction activities	Avoid sensitive riparian habitat Minimise impact of roads on wetlands and drainage lines Prevent temporary water bodies Minimise impact on wetlands and drainage lines Buffer wetlands and riparian zones No contamination Limit disruption of water flow No erosion Absents of fill material following construction	■ Follow the principle of avoidance of locally sensitive riparian habitat (such as large indigenous trees) by micro-adjustments to the pipeline alignment, once the centre line is pegged. Decisions in this regard should be informed by a competent ecologist. ■ Plan construction access roads to minimise their total length. Limit vehicle access to the construction right of way and other existing road networks, wherever feasible. ■ Compile a photographic record of stream bank conditions; and avoid creation of temporary water bodies that could increase water-related diseases. ■ Schedule works across rivers and wetlands in the dry season to minimise the handling of wetland soils with heavy tracked equipment. ■ Locate all stockpiles, laydown areas and temporary construction infrastructure at least 50 m from the edge of delineated wetlands and riparian zones. ■ Prohibit the storage of oils, fuel or other hazardous materials within 100 m of delineated wetlands and riparian zones. ■ Where necessary, maintain flow connectivity in wetlands and watercourses by temporarily diverting flow around the construction area. ■ Install erosion prevention measures prior to the commencement of construction activities at wetland/riparian zone crossings. Measures may include low berms on approach and departure slopes to crossings to prevent flow concentration, sediment barriers along the lower edge of bare soil areas, and re-vegetation of disturbed areas. ■ Where fill material is introduced into the wetlands and drainage lines to provide footing for construction vehicles, ensure that it is all removed after construction. Prepare a method statement covering all aspects of construction in the wetlands and drainage lines. This is to include: ■ Access requirements and approach; ■ Proposed drainage requirements in the event that stream flow is encountered; ■ An itemised list of equipment that will be used; ■ Provision for sediment barriers in the form of berms and/or indigenous silt fences made from geotextiles and/or indigenous grasses; ■ Measures to reinstate soils, subsurface material and natural ground contours. In the event that impermeable layers are penetrated by excavation of the trench, these must be reinstated; ■ Measures to ensure the continued full reinstatement of the hydrological functioning of the wetland system during after construction; ■ Measures to ensure that vehicles equipment working in the wetlands (such as pumps) are operated on drip trays or plastic liners; and	Construction contractor Environmental Coordinator CNOOC	■ Record of access route planning to minimize length and avoid wetlands ■ Photographic record of wetland, stream bank areas before and after construction ■ Record of schedule for works across rivers ■ Site layout of stockpiles indicating locations atleast 50m from wetland areas ■ Site material laydown area showing storage of oils, fuel, hazardous materials ■ Presence of low berms on approach and depature slopes ■ Record of re-vegetation activities after construction ■ Record of site rehabilitation ■ Environmental audit report	Monitoring to be undertaken throughout the construction.	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				■ Provision to minimise the risk of hydrocarbon spills.				

6.7.3 Species of concern

Environmental management species of concern is addressed below.

Table 6-13: Grey Crowned Crane

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Construction works along the project facilities	Changes in quality and quantity of habitat for the Grey Crowned Crane	Preserve habitat Survival of Grey Crowned Crane	Implement the mitigation set out for wetlands under Table 6-12 to reduce further loss, fragmentation and degradation of habitats. Implement measures to minimise impacts on Grey Crowned Crane reproduction and survival in the CHAA. Measures should include: ■ Prohibit CNOOC staff and construction subcontractors from entering areas beyond the construction right of way, approved access roads and any other approved construction area; ■ Develop contractor education programmes regarding the Grey Crowned Crane to prevent the occurrence of incidents involving harassment or hunting of the birds or capture and sale of chicks if found during construction activities. These programmes should be applicable to all staff at induction and to working teams (as tool box talks) during the course of construction; ■ CNOOC to develop and disseminate community education programmes on Grey Crowned Crane habitat conservation, prevention of illegal trade in wild birds and chicks, and prevention of incidences of poisoning; ■ CNOOC to develop and implement a long-term research and monitoring programme to improve understanding of the behaviour and status of Grey Crowned Crane in the CHAA; and ■ Develop measures to discourage and monitor migration into the area. This recommendation is to involve the Government and CNOOC (and possibly other oil industry players, as a part of an overall cumulative impact management strategy).	Construction contractor Environmental Coordinator Construction contractor Environmental Coordinator CNOOC	No avoidable habitat degradation. Clean environmental audit report	During surveying or bush clearing At all times.	

Table 6-14: Nahan's Francolin

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Construction works along the project facilities	Increasing pressure on the BCFR from human population around the forest Potential for exposing sensitive habitats due to Human encroachment on forest Changes in quality and quantity of habitat for the Nahan's Francolin	Preserve habitat	Implement the mitigation set out in relation to habitats and ecosystem integrity and for the Bugoma CFR to reduce further loss, fragmentation and degradation of habitat. Large, mature buttressed trees that constitute suitable nesting habitat for Nahan's Francolin should be avoided during vegetation clearance works for the P1 road upgrade.	CNOOC Construction contractor Environmental Coordinator CNOOC	Documented surveys showing extent as well as presence/ albescence of Nahan's Francolin in relation to construction activities. The following must be included: ■ Specialist used to survey and identify species; ■ Number of species located; ■ Locality and populations of invasive species; ■ Location of significant habitats, including nesting sites; ■ Locations of suitable relocation sites for individuals; ■ Number of individuals relocated; ■ Realignment of Project footprint to avoid sensitive habitats; ■ Impactive translocation of threatened plants, and/or collection of reproductive material; and ■ No avoidable habitat degradation.	Weekly, before any clearing activities and during surveying or bush clearing Information to feed into annual monitoring reports	Pre-construction planning requirements
	Human presence and mechanical noise generated during construction activity	Impacts on Nahan's Francolin abundance and distribution, and reproduction and survival in the CHAA	Minimise disturbance through appropriate schedules	Implement measures to minimise impacts on Nahan's Francolin abundance and distribution, and reproduction and survival in the CHAA, particularly those arising from sensory disturbance caused by human presence and mechanical noise generated during construction activity associated with the P1 road upgrade activity. These should include restrictions in operating hours for heavy machinery, use of low-pitched reverse alerts, and restriction of access for road construction workers to areas beyond the road upgrade right of way. Develop and implement a long-term research and monitoring programme to improve understanding of the behaviour and status of Nahan's Francolin in Bugoma Forest (this recommendation is developed further in Chapter 17 of the ESIA, Cumulative Impacts). Liaise with government in enforcement of existing government forestry policies in Uganda.	CNOOC Construction contractor Environmental Coordinator CNOOC	■ Environmental audit report. ■ Record of instruction on the restriction in operating hours for heavy machinery ■ Documented research and monitoring programme. ■ Record of collaborative effort with Government on conservation.	During surveying or bush clearing	Pre-construction planning requirements

Table 6-15: Eastern Chimpanzee

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Construction activities	Increasing pressure on the BCFR from human population around the forest Potential for exposing sensitive habitats due to Human encroachment on forest Changes in quality and quantity of habitat for the Eastern Chimpanzee	Preserve habitat	Implement the mitigation set out in relation to habitats and ecosystem integrity (Table 6-10) and for the Bugoma CFR (Table 6-11) to reduce further loss, fragmentation and degradation of habitat. Develop and disseminate community education programmes on Eastern Chimpanzee habitat conservation, and prevention of illegal trade in wild animals for live trade and bushmeat, in liaison with existing Eastern Chimpanzee conservation programmes (e.g. Jane Goodall Institute Uganda's environmental education programme). Develop and implement a long-term research and monitoring programme to improve understanding of the behaviour and status of Eastern Chimpanzee in Bugoma Forest (this recommendation is developed further in Chapter 17 of the ESIA, Cumulative Impacts). Support the government in enforcement of existing government forestry policies in Uganda.	CNOOC Construction contractor Environmental Coordinator CNOOC	Documented surveys showing extent as well as presence/absence of Nahan's Francolin in relation to construction activities. The following must be included: ■ Specialist used to survey and identify species; ■ Number of species located; ■ Locality and populations of invasive species; ■ Location of significant habitats, including nesting sites; ■ Locations of suitable relocation sites for individuals; ■ Number of individuals relocated; ■ Realignment of Project footprint to avoid sensitive habitats; ■ Impactive translocation of threatened plants, and/or collection of reproductive material; and ■ No avoidable habitat degradation. ■ Documented research and monitoring programme.	Throughout the project cycle	Pre-construction planning requirements
	Human presence and mechanical noise generated during construction activity	Impacts on Chimpanzee abundance and distribution, and reproduction and survival in the CHAA	Minimise disturbance through appropriate schedules	Implement measures to minimise impacts on Eastern Chimpanzee abundance and distribution, and reproduction and survival in the CHAA, particularly those arising from sensory disturbance caused by human presence and mechanical noise generated during construction activity associated with the P1 road upgrade activity. These should include restrictions in operating hours for heavy machinery, use of low-pitched reverse alerts, and restriction of access for road construction workers to areas beyond the road upgrade right of way.	CNOOC Construction contractor Environmental Coordinator CNOOC	■ Environmental audit report. ■ Record of instruction on the restriction in operating hours for heavy machinery	During surveying or bush clearing	Pre-construction planning requirements

6.8 Water Management Plan

The water management plan for the construction of the Feeder Pipeline is presented in Table 6-17 to Table 6-19 and details the management of water use and discharge in relation to: fresh and marine environments, ground and storm water, produced and sewage water, as well as water abstraction by water intake.

Table 6-16: General

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
5.6.1	General Water use	Impact on water quality	Compliance with National legislation and GIIP.	CNOOC's water management specification must be enforced and water use and waste water discharge must comply with local legislation (e.g. National Environment Standards for Discharge of Effluent into Water or on Land Regulations, S.I. No 5/1999, Water (Waste Discharge) Regulations, 1998), as well as the latest IFC wastewater and ambient water quality guidelines.[67]	CNOOC Construction contractor	■ No exceedances of relevant water quality guidelines.	Quarterly monitoring records submitted to relevant authority	■ CUL-QHSE-L3(GE)-054 Water Management Specification; and ■ IFC General EHS Guidelines: Environmental Wastewater and Ambient Water Quality (2007).
5.6.2	Water abstraction	Potential to put pressure on existing community water resources	Appropriate management	Appropriate water abstraction permits must be obtained before using ground or surface water. All requirements in the permit must be complied with and a water flow meter must be installed at the point of water abstraction to record daily water usage. ***Lost Borehole Supply*** ■ Drill a new borehole outside of the construction right of way or slightly re-align the pipeline to place the borehole outside of the right of way; and ■ Inform communities of the impact and planned mitigation well in advance of construction. ■ Support affected communities with alternative water sources to mitigate the pressure that may result from the influx	CNOOC Construction contractor Social Performance team	■ All required permits in place; and ■ Compliance with domestic wastewater specification.	Quarterly monitoring records submitted to relevant authority	
	Construction across water/stream crossing	Obstruction to water flow	No obstruction of water flow	■ Impediments to natural water flow shall be avoided, or, if unavoidable, be allowed for in the design by means of appropriately sized and positioned drains and culverts. ■ Ensure that blast charges on the escarpment are sufficiently low to minimise risk to the nearby water / borehole supply. ■ Monitor water quality in all community boreholes within 100 m of the route before and after construction as a means of verifying the absence of impact.	CNOOC; and Contractor	■ No damming of water or obstructions to water flow (natural or during storm events).	Quarterly monitoring records submitted to relevant authority	
	Effluent management	Potential for environmental contamination	No surface water pollution by effluent management	■ Appropriate use of soak-ways and seepage fields must be put in place to prevent contamination of surface water. ■ Ensure that treated sewage effluent consistently meets the project specification.	CNOOC; and Contractor	■ Runoff water quality (records); and ■ Identification of areas where activities could cause contamination and evidence of measures taken to avoid these.	Quarterly monitoring records submitted to relevant authority	
	Obstruction of water flows	Potential for flooding at stream crossings	Avoid obstruction to storm water	Obstruction to storm water flows must be avoided using culverts, drains and other means to maintain natural flow volumes and directions.	CNOOC; and Contractor	■ Details of measures implemented in designs.	Prior to construction activities	
	Dust Suppression	Potential for sedimentation in surface waters	Minimise dust in surface waters	Biodegradable chemical suppression or the use of water sprayers is required to keep the dust levels low and avoid sedimentation in the local surface waters.	CNOOC; and Contractor	■ No sedimentation of the water courses.	Monthly	Air Quality Management plan

[6] IFC General EHS Guidelines: Wastewater and Ambient Water Quality (2007).

[7] IFC Onshore oil and gas development: Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development (2007).

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Sewage water management	Potential for environmental contamination	Appropriate treatment	Discharge from the construction camp sewage works will be to a soak away designed in line with the requirements of the Ugandan discharge standards and the IFC Environmental, Health and Safety (EHS) Guidelines for treated sanitary sewage discharge quality, which are described in the table below.	CNOOC; and Contractor	■ Water quality analysis on treated water.	Monthly	
	Process Water Management	Spills causing contamination	No spillages	Management of process water to prevent spillages into the environment.	CNOOC; and Contractor	■ Spill volumes.	Continuously	
	Ground works	Accelerated erosion	Minimise erosion	Accelerated erosion during storm events shall be minimised during all stages of construction. Should this be unavoidable, specific erosion control measures shall be implemented for the duration of the storms (e.g. packing of sandbags to control storm drainage, diversion berms, temporary culverts etc.) to minimise erosion.	Construction contractor Environmental Coordinator	■ Minimised alteration of natural flows; ■ Details of measures implemented to control storm water; and ■ Absence of material erosion on site.	At all times	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Proposed discharge of cleaning and hydrotest water from the feeder pipeline into Lake Albert	Impact on aquatic species and water quality	Minimise water and chemical use	■ Monitoring of the mud snails (*Gabbiella spp*. generally and *Gabbiella candida* if found) should be undertaken before during and after construction of the pipeline and disposal of cleaning and hydrotest effluent into the Lake, at locations closest to the discharge point along the shoreline ■ The same water should be used for multiple tests; ■ The need for chemicals must be minimised by reducing the time that test water remains in equipment and the pipeline; ■ Chemical additives must be carefully selected in terms of dose concentration, toxicity, biodegradability, bioavailability, and bioaccumulation potential; ■ Consider all reasonable measures to avoid the use of biocides and corrosion inhibitors as the preferred solution to hydrotest water management. If these substances must be used, select low-toxicity alternatives; ■ Prior to its release, contain all mill scour and hydrotest water and undertake a Toxicity Identification Evaluation (TIE) as the basis for final decision-making. The TIE is to be undertaken by a certified biotoxicity laboratory. Samples for testing are to be taken by an aquatic ecologist, using recognised quality assurance / sample preservation procedures; ■ Undertake the following definitive biotoxicity tests as a part of the TIE: ▪ Fish lethality test; ▪ Daphnia lethality test; ▪ Algal growth inhibition test; and ▪ Bacterial growth inhibition test. ■ Filter the wastewater through sand filters prior to its release, so as to remove any solids; ■ Comply with the recommendations of the TIE for applicable dilution factors and release rates; ■ Consider alternatives to the release of the wastewater directly into the lake. Given the extremely high sensitivity of the Lake Albert fishery, and the likely perceptions that could be created if wastewater is disposed into the lake, even if unfounded, there is a material risk of disputes associated with any mill scale or hydrotest discharges into the lake. Alternatives could include irrigation at specified locations on the Flats and above the escarpment; ■ Monitor the effect of disposal through direct observation by an ecologist; ■ If the discharge of hydrotest waters to the lake is the only feasible alternative for disposal, a hydrotest water disposal plan should be prepared that considers points of discharge, rate of discharge, chemical use and dispersion, environmental risk, and monitoring. Hydrotest water disposal into sensitive ecosystems (i.e. lagoon, wetlands etc. should be avoided; and ■ Discharge water from hydrotesting should meet the standards described in the table below.	CNOOC Construction contractor Environmental Coordinator	■ Monitoring documents for the potentially affected aquatic species ■ List of chemicals used in the hydrotesting, instruction on quantities and end handling ■ Record on the toxicity identification evaluation ■ Record on biotoxicity tests on fish, daphnia, lethality including algal & bacterial growth inhibition ■ Presence of sand filter through which hydrotest water will be filtered before discharge ■ Record of monitoring by ecologist ■ Documented hydrotest water disposal plan ■ Record of water tests complying with	Before, during and after When hydrotesting is undertaken	

Table 6-17: Waste water

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.6.1	Servicing of vehicles and repair at the base camp	Potentially oil-contaminated (POC) wastewater from spillage at Base camp	Minimise wastewater pollution	Small quantities of POC wastewater may result from washdown of spillages in the POC work areas at the Base Camp. These include bunded areas for petroleum storage, the bunded generator platform and areas designated for vehicle servicing and repair. All wastewater generated from these activities must be managed in accordance with the CNOOC Waste Management Plan and meet produced water and hydrotest water requirements outlined in Table 6-18.	CNOOC Construction contractor	■ POC-contaminated areas contained and drainage routed through mechanical oil traps.	Annually	
5.6.2	Domestic wastewater management	Potential for contamination from waste water at the construction camp	Minimise impact of domestic wastewater	Domestic wastewater at the construction camp will report to the soak away and must meet local and IFC requirements for discharge as described above.	CNOOC Construction contractor	■ Compliance with domestic wastewater specification.	Annually	
	Storm water management	Contaminated storm water from site activities at the pipeline construction site, base camp	Appropriate management	Any storm water that has been potentially contaminated by oil, grease or other chemicals from site activity needs to be treated to the discharge standards listed in Table 6-18 before it can be released to the environment. Key principles that must be applied during construction include: ■ Plan construction activities to avoid sensitive times of the year, like heavy rain seasons; ■ Minimize areas to be cleared, and use hand cutting tools to avoid unnecessary increases in erosion in the area and sedimentation in the surface waters; ■ Consider the use of existing roads for access to reduce the impact of erosion, sedimentation and obstruction to the natural surface water flow. Try to construct pipelines along existing infrastructure and roads; ■ Install temporary erosion, sediment control measures, and slope stabilization measures at all times, where necessary; ■ Peak discharge rate must be reduced in areas of development to reduce the potential erosion of the flow paths and sedimentation of downstream surface waters; ■ Storm water must be kept separate from other process and sanitation wastewater streams to reduce the volume of wastewater to be treated; ■ Runoff from process areas must be kept separate from less contaminated (or sediment heavy) runoff areas to prevent further water contamination. Storm water from process areas needs to be treated to the discharge standards listed in Table 6-18 before being released to the environment; ■ Oil/ water separators and grease traps must be installed and maintained at refuelling areas, workshops, parking areas and fuel storage areas; ■ Runoff from areas with potential sources of contamination and sediment loading should be minimized; and ■ Reuse of storm water and contaminated runoff should be done. Storm water should be managed as a resource.	CNOOC Construction contractor	■ Documented construction plan ■ Presence of erosion, sediment control measures ■ Evidence of storm water storage separate from other process waters ■ Presence of oil separators and grease traps installed and maintained at refuelling areas ■ Record of reuse of storm water	Annual monitoring	

Table 6-18: Discharge standards to surface water and land

Ref.	Aspect/ Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Generation of sewage	Contamination of water sources	Appropriate management	Sewage waste must be treated and disposed of in accordance with Environmental (Standards for Discharge of Effluent into Water or on Land) Regulations, S.I. No 5/1999. Reference also needs to be made to World Bank Group EHS Guidelines, Onshore Oil and Gas Development, 2007. Discharged sewage water must meet the following criteria: ■ pH: 6-8[8]; ■ Biochemical oxygen demand (BOD): 30 mg/l; ■ Total Nitrogen: ≤10 mg/l; ■ Total Phosphorus: ≤2 mg/l; ■ Oil & Grease: ≤10 mg/l; ■ Total suspended solids (TSS): ≤50 mg/l; and ■ Total Coliform Bacteria: ≤400 MPN (most probable No.) per 100 ml. The above standards are minimum requirements and any other parameters or stricter concentration requirements included in the permit issued by local environmental authority must be complied with by treating the waste water to meet the standards (at an appropriate treatment facility) prior to discharge.[9]	CNOOC Construction contractor	■ Operation of plant as per requirement; ■ Compliance with sewage effluent wastewater standard; and ■ Records of treated sewage effluent monitoring and trends in ESO monthly reports.	During camp construction. Monitoring at specified intervals thereafter	■ CUL-QHSE-L3(GE)-054 Wat Management Specification; ■ IFC General EH Guidelines: Environmental Wastewater an Ambient Water Quali (2007); ■ US EPA Nation Recommended Wat Quality Criteria; and ■ http://www.epa.gov/w terscience/criteria/wq riteria.html
5.6.5	Produced Water and Hydrotest Water	Contamination of water sources	Meet all standards for discharge of hydrotest water	Discharged produced water and hydrotest water must meet the following criteria[10]: ■ Total hydrocarbon content: 10 mg/l ■ pH: 6 to 8[10]; ■ BOD: ≤25 mg/l; ■ Chemical oxygen demand (COD): ≤125 mg/l; ■ Total dissolved solids (TSS): ≤35 mg/l; ■ Phenols: ≤0.5 mg/l; ■ Sulphides: ≤1 mg/l; ■ Heavy metals[11] (total): ≤5 mg/l; and ■ Chlorides: ≤600 mg/l (average) and ≤1 200 mg/l (maximum).	CNOOC Construction contractor Environmental Coordinator	■ Minimised alteration of natural flows; ■ Details of measures implemented to control storm water; and ■ Absence of material erosion on site.	Before, during and after When hydrotesting is undertaken	
	Completion and Well work-over fluids	Contamination of water sources	Meet standards for discharge of well work-over fluids	Discharge of Completion and Well work-over fluids must meet the following criteria[12]: ■ Total hydrocarbon content 10 mg/l; and ■ pH: 6 to 8[10].	CNOOC Construction contractor Environmental Coordinator	■ Record of water analysis for cooling water before discharge.	Annually	
	Storm water management	Contamination of water sources		Storm water runoff must be treated through an oil/ water separation system able to achieve oil and grease concentration of 10 mg/l (maximum).	CNOOC Construction contractor Environmental Coordinator	■ Record of treated effluent analysis.	Annually	

[8] In line with CNOOC CUL-QHSE-L3(GE)-054 Water Management Specification

[9] Examples of appropriate industrial waste water treatment approaches are provided in Annex 1.3.1 of the IFC General EHS Guidelines: Environmental Wastewater and Ambient Water Quality (2007).

[10] Emissions, Effluent and Waste Levels from Onshore Oil and Gas Development (International Finance Corporation, 2007)

[11] Heavy metals include: Arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, vanadium, and zinc.

[12] Emissions, Effluent and Waste Levels from Onshore Oil and Gas Development (International Finance Corporation, 2007)

Ref.	Aspect/ Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Discharge of water used for cooling	Impact on water quality	Compliance with discharge requirements for cooling water	Effluent should result in a temperature increase of no more than 3°C at the edge of the zone where initial mixing and dilution take place. Where the zone is not defined, use 100 m from point of discharge.	CNOOC Construction contractor Environmental Coordinator	■ Record of effluent waste water discharge temperature	Annually	

Table 6-19: Water supply

Ref.	Aspect/Activity	Potential impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Refe
5.6.7	Groundwater use	Impact on community boreholes	No impact on community boreholes	The contractor shall obtain all necessary permits for the use of groundwater. Water abstraction for the project shall be from groundwater boreholes. The project shall have no detrimental impact on water volumes available to existing users in the area. If any borehole is closer than 1 000 m to the nearest community borehole, specific provision shall be made to monitor the effect of construction on community water supply and to supplement this supply, if necessary. The following must be done if boreholes are significantly affected: ■ Drill new borehole outside of the construction right of way or slightly re-align the pipeline to place the borehole outside of the right of way; and ■ Inform communities of the impact and planned mitigation well in advance of construction.	CNOOC Construction contractor	■ Records of proximity of project water supply to community boreholes. ■ Monitoring of community boreholes, if required. ■ Record of action taken if community borehole temporarily affected. ■ Records of communication with community. ■ Photographic evidence of damaged boreholes and corrective action.	Pre-planning. Monitoring if closer than 1,000 m from a community borehole	
	Groundwater use	Impact on groundwater supply and quality	Minimise impact on groundwater supply and quality	■ The contractor shall obtain all necessary permits for the use of groundwater. ■ Ensure that blast charges on the escarpment are sufficiently low to minimise risk to nearby water / borehole supply; ■ Monitor water quality in all community boreholes within 100 m of the route before and after construction as a means of verifying the absence of impact; and ■ Ensure that treated sewage effluent consistently meets the project specification. If treated water exceeds specifications, it must be appropriately treated to meet specifications before being released.	CNOOC	■ Records showing monitoring of water quality in selected boreholes along the pipeline route before and after construction as a means of verifying the absence of impact.	Bi-annual or as requested by relevant Authority	
5.6.8	Surface water use	Impact on surface water sources	Compliance with Ugandan water authorities	The contractor shall obtain all necessary permits for the use of surface water. Should the use of surface water be considered this shall be subject to the approval of the Ugandan water authorities. The use of surface water from pans and depressions in the study area shall be prohibited.	Construction contractor CNOOC	■ Authorisation by CNOOC; and ■ Quantity and location of surface water use.	Annually	

6.9 Traffic Management

The traffic management plan for the construction of the Feeder Pipeline is presented in Table 6-20 and outlines journey management of project related vehicles.

6.9.1 General

Table 6-20: General Traffic

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.8.1	Establishing routes for access to sites	Increasing traffic risks for communities Road traffic incidents or accidents Exceeding of speed limits Injuries to community members due to driver error	Ensure community safety throughout project lifetime Avoid creating new roads Increase community awareness towards traffic issues Minimize public nuisance	■ CNOOC's Land Transportation Specification must be implemented. ■ The Construction contractor shall submit a Traffic Access and Safety Plan to CNOOC for approval, prior to site establishment, defining the transport routes to be used to and from the construction work areas and camps, and measures that will be taken to ensure community safety during construction. ■ All off-road driving prohibited without prior approval from CNOOC. ■ Use of road marshals to control traffic at designated points such as crossings for animals and people, corners and black spot areas. ■ Safe travelling speeds for each section of the route along the right of way shall be determined and enforced. Enforcement may include, but not be limited to, the monitoring of vehicle speeds, the erection of speed limit signs and the installation of speed humps. ■ All vehicle operators shall have received defensive driver training, aimed at promoting improved driver safety performance. ■ CNOOC shall conduct an ongoing traffic safety awareness campaigns during the construction period, particularly in communities where construction vehicles will be most active. The awareness trainings shall be repeated in villages as construction moves into their areas. ■ In the event of an accident in which a community member is harmed, CNOOC (or the Construction contractor) shall take responsibility for transporting the injured person to an appropriate health facility capable of dealing with the injuries. ■ Except for emergencies, hooting must be prohibited to avoid unnecessary noise. ■ Vehicles must not be allowed to idle to avoid unnecessary noise and air pollution. ■ Transported goods must be securely stowed and covered so that materials cannot fall/ fly off, causing injuries or pollution. ■ Drivers to adhere to CNOOC's Land Transportation Specification.	Construction contractor CNOOC CLO LOCSA	■ Compliance with CNOOC's Land Transportation Specification. ■ Plan submitted and approved; and ■ Records of accidents and corrective actions taken. ■ Limited new access road development; and ■ Written authorisation from CNOOC where access roads necessary. ■ Speed testing, speed limit signage; ■ Absence of community complaints; and ■ Records of defensive driver training; and ■ Accident records and trends. ■ Records of traffic awareness campaigns. ■ Number of near misses; and ■ Number and nature of accidents involving community members (minor to serious). ■ Complaints registered by communities or employees in the Complaints Register; and ■ Itemised inventory registers showing that nothing has been lost from vehicle.	Prior to site establishment with bi-annual monitoring that feeds data into the annual audit report	CUL-QHSE-L3(GE)-023 Land Transportation Specification

6.9.2 Traffic Safety

Table 6-21: Traffic safety

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Vehicle movement	Increase in transport risks due to regular travel of construction vehicles on dirt roads along the pipeline corridor Vehicles hauling pipeline construction materials and workers may cause traffic hazards in trading centres or near schools and along narrow roads	Appropriate safety practices Minimise traffic	CNOOC's land transportation specification must be implemented and transport safety practices must include: ■ Promotion of safety aspects among drivers; ■ Continuous improvement of driving skills and appropriate licensing of drivers; ■ Incorporating limits for trip duration and arranging driver rosters to avoid overtiredness; ■ Avoiding dangerous routes and times of day to reduce the risk of accidents; ■ Use of speed control devices (governors) on vehicles, and remote monitoring of driver actions; and ■ Implement driver and mobile equipment training programmes in accordance with internationally recognised guidelines for workplace safety. ■ Vehicles must undergo regular maintenance and repair using manufacturer approved parts. ■ Pedestrian interaction with project vehicles must be limited. ■ Local communities and responsible authorities must be engaged and educated on visibility, signage, and overall safety of roads (especially where children may be) through the road safety awareness campaigns that must be regular during the lifecycle of the Project and particularly development phase of the project. ■ Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents. ■ Using locally sourced materials will be undertaken to minimize transport distances.	CNOOC Construction contractor	■ Compliance with CNOOC's land transportation specification; ■ Documented training; ■ Documented awareness campaigns including photographic evidence of engagement ■ Complaints registered by communities or employees in the Complaints Register; ■ Correspondence and coordination records with relevant stakeholders; ■ Documents indicating preference for locally sourced materials Records of timeous corrective action to resolve complaints; and ■ Records in ESO monthly reports. ■	Pre-construction with annual monitoring	■ CUL-QHSE-L3(GE)-023 Land Transportation Specification ■ CNOOC Grievance Mechanism Specification.
	Transportation of hazardous material	Hazards from dangerous wastes produced at work sites such as pipe cuttings, waste welding rods and flux, oil spills from vehicles and equipment and other incidental discarded construction material and waste	Appropriate transport procedures	CNOOC's hazardous chemical management specification must be complied with and procedures must be in place to ensure compliance with local laws and international requirements applicable to the transport of hazardous materials. Transport of hazardous materials must include: ■ Appropriately trained personnel; ■ Proper labelling on containers (i.e. quantity, identification, and relevant MSDS); ■ Chain of custody documents; ■ Appropriate packaging; ■ Application of special provisions, as appropriate; ■ Vehicle specifications relevant to transported material; and A 24 hour/day emergency response system. CNOOC's emergency response plan and emergency preparedness and response procedure must be implemented and must address: ■ Co-ordination with the public and emergency response agencies; ■ First aid and medical treatment; ■ Appropriate response actions;	CNOOC Construction contractor	■ Appropriate documentation; ■ Investigations are initiated promptly; ■ Reporting of investigations including findings and recommendations; ■ Report findings and recommendations are addressed promptly; and ■ Evidence that relevant personal have reviewed documents. ■ Appropriate documentation; ■ Investigations are initiated promptly; ■ Reporting of investigations including findings and recommendations; ■ Report findings and recommendations are addressed promptly; and	Annual monitoring	■ CUL-QHSE-L3(GE)-023 Land Transportation Specification; and ■ CUL-QHSE-L3(GE)-045 Hazardous Chemicals Management Specification. ■ CUL-QHSE-L2-010 Emergency Preparedness and Response Procedure; and ■ CUL-QHSE -ERP Emergency Response Plan.

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				■ Review and updating to reflect change and the notification of employees of such change; ■ Appropriate emergency equipment (use, inspection, and maintenance); and ■ Appropriate training.		■ Evidence that relevant personal have reviewed documents.		

6.10 Community health, safety and security

The community health, safety and security management plan for the construction of the Feeder Pipeline is presented in Table 6-22 to Table 6-24. Traffic in relation to the community health, safety and security is outlined above in Table 6-20.

6.10.1 Nuisance

Table 6-22: Nuisance

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.9.1	Construction activities during night time	Nuisance impacts from project activities Disturbance to communities from night time activities	Minimize nuisance suffered by community from project activities	No construction shall take place outside of daytime hours without the written permission of CNOOC, after due consideration of the potential of the activity to create nuisance.	Construction contractor CLO	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records of observations in ESO/CLO monthly reports; and ■ (Need for use of formal monitoring equipment to be determined by CLOs and ESO, based on circumstances on site).	Annually Formal monitoring as specified by CNOOC	■ CUL-QHSE-L2-005 Communication Management Procedure; and ■ CUL-QHSE-L3(GE)-006 Stakeholder Engagement Specification.
5.9.2	Dust generation from construction activities	Dust nuisance	Minimise dust generation and comply to relevant legislation and guidelines	Dust caused by construction activities shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. The contractor shall comply with the Ugandan legal requirements and IFC/World Bank air quality guidelines for suspended particulates. These are as follows: ■ Suspended Particulates (Ugandan daily standard): ≤200 µg/m^3 ■ PM_{10} (IFC daily standard): ≤50 µg /m^3; and ■ PM_{10} (IFC annual standard): ≤20 ug/m^3. Where considered necessary by CNOOC, the Construction contractor shall demonstrate compliance with the above standard by monitoring of dust using passive air quality monitoring devices. Dust suppression measures to meet the standard shall include dust suppression along roads using water carts and, where necessary, 'environmentally friendly' surface binding products to achieve dust reduction. The Construction contractor shall ensure that sufficient watering capacity is available on site to dampen dust at all work areas and along access roads used by construction traffic, particularly in areas where there are nearby communities.	Construction contractor EC ESO CLO CNOOC	■ Monitoring of dust levels in environment; ■ Compliance with dust standards at nearest sensitive receptors; and ■ Complaints recorded in Compliments and Complaints Register. ■ Records of timeous corrective action to resolve complaints; and ■ Records of monitoring in ESO weekly and monthly reports.	Weekly during the dry season Formal monitoring as specified by CNOOC	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.9.5	Noise generation	Noise nuisance	Maintain project activities within permissible limits	Noise levels shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. All vehicles and equipment shall be fitted with noise suppression, as appropriate, and operated and maintained at all times in conformity with the manufacturer's specifications, instructions and manuals. The Construction contractor shall comply with the World Bank guideline for daytime noise affecting communities (Laeq of 55 dBA, measured at the receiver). In cases where there is evidence of noise nuisance based on field observations by CNOOC, or based on complaints received, the Construction contractor shall take measurements to verify noise levels being generated by construction work and shall take the necessary corrective action.	Construction contractor CNOOC	■ Complaints registered by communities or employees in the Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records in ESO monthly reports; and ■ Monitoring results, when required by the ESO/CLO. ■ Records of regular community liaison and discussion about nuisance issues.	As required	
5.9.7	Community perception of project activities	Potential for communities to develop entrenched negative opinions about the project	Establish a solid "social license to operate"	The CLO(s) and ESO shall communicate regularly with households and other receivers living close to construction activities where noise and dust are potentially affecting them. Most people are tolerant of short term nuisance when treated courteously and when efforts are made to minimise their issues of concern. Formal monitoring equipment to be determined by the Environmental Coordinator based on circumstances on site.	Construction contractor CLO Environmental Coordinator CNOOC	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; and ■ Records of observations in ESO/CLO monthly reports.	Monthly	

6.10.2 Population influx and Social Pathologies

Table 6-23: Population Influx and Social Pathologies

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Immigration of opportunity seekers	Potential for tensions to escalate as migrants compete with local people for natural resources. Demand for land and price speculation is expected to increase	To manage impacts arising from Population influx adequately	■ The Community Health, Safety and Security Plan and an Emergency Response Plan should be updated and amended as required to meet the requirements of IFC PS 4, should conditions change on this site; ■ Develop an induction programme, including a Code of Conduct, for all workers directly related to the project. A copy of the Code of Conduct is to be presented to all workers and signed by each person. The Code of Conduct must address the following aspects: ▪ Respect for local residents and customs; ▪ Zero tolerance of bribery or corruption; ▪ Zero tolerance of illegal activities by construction personnel including prostitution, illegal sale or purchase of alcohol, sale, purchase or consumption of drugs, illegal gambling or fighting; ▪ Zero tolerance policy of drunkenness on the row and no alcohol and drugs policy during working time or at times that will affect ability to work or within accommodation camps or acquired from outside the camp whilst accommodated in the camp; ▪ A programme for drug and alcohol abuse prevention and random testing that is equivalent in scope and	CNOOC Construction Contractor	■ Code of conduct and evidence for distribution to all project workers; ■ Record of induction programme for all project workers ■ Record of communication of code of conduct to settlements around the camp ■ Grievance management procedure ■ Number of complaints lodged; and ■ Disciplinary actions taken. ■ Records of meetings; ■ Records of construction employment to local people; and ■ Surveys of interviews with village community leaders about in-migration.	Pre-construction Annually, throughout project lifetime	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				objectives to the policies prescribed in the code of conduct; and ▪ Description of disciplinary measures for infringement of the code and company rules. If workers are found to be in contravention of the code of conduct, which they signed at the commencement of their contract, they must face proportionate disciplinary procedures. ■ Publicise the Code of Conduct in settlements potentially affected by the construction camps, as well as those along the RoW, as part of the community relations plan. This will help ensure that the local residents are aware of the expected behaviour of construction staff. Posters with the Camp Rules should also be posted in neighbouring settlements or lodged with the LC1 of each village; ■ Provide entertainment facilities for workers at the construction accommodation camp and establish clear rules for conduct during leisure time as well as the need to remain within the camp boundaries during leisure time; and ■ Implement a grievance procedure that is easily accessible to the local community, through which complaints related to CNOOC contractor or employee behaviour that infringes on the health, safety or security of community members can be lodged and responded to. CNOOC must respond to such complaints in a considered manner, including: ▪ Circulation of contact details of community liaison officers or, if separate, of 'grievance officers' or other key contact; ▪ Circulation of details of the Witness NGO as well as the mechanisms to access the NGO; ▪ Raising of awareness amongst the local community regarding the grievance procedure and how it will work; ▪ Establishment of a grievance register that is continuously updated and maintained by CNOOC; and ▪ Provision of a mechanism to provide feedback to individuals, groups and village councillors regarding actions that have been taken in response to complaints lodged. ■ Records shall be kept of the number of communication initiatives nationally, in the Province and District and in the nearest communities. Updated records shall also be kept of the number of construction jobs awarded to people verified as 'local' from the communities, as well as from the District, Province and Nationally. Survey results shall be maintained from interviews with village leaders about increases in numbers of new arrivals.				
5.9.8	Recruitment of Workers for the project	Impact on community resources	Develop and implement an overarching communication strategy to handle all CNOOC strategies in	A Communication Plan shall be prepared including national coverage and community communication campaigns, starting prior to establishment on site, and communicating the following CNOOC policies: ■ No hiring of job seekers on site; ■ No procurement at the gate;	CNOOC Public Affairs Coordinator LOCSA	■ Inclusion of recruitment issues in the Communication Plan. ■ All unskilled employment requests channelled through the CLF;	Throughout the project construction process with annual monitoring	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
			employment process	■ Employment selection in agreement with agreed procedures by the Community Liaison Forum; and ■ Maximising local content in procurement (i.e. from local people and town). ■ All unskilled employment as reasonably possible shall be from local project-affected villages, if sufficient numbers of applicants are available who comply with project requirements for unskilled workers. Recruitment of unskilled labour shall be in accordance with the agreed procedures of the Community Liaison Forum (CLF), a part of whose mandate is to provide CNOOC with unskilled personnel based on a fair and transparent selection process.		■ Employment as per the procedure agreed by the CLF; and ■ Number of employment selection issues registered in the Complaints Register.		
	Land acquisition by migrants	Speculation of land and property rates that could lead to hostilities in project areas Disruption of livelihoods and property rates	Ensure all Land dealings are transparent	■ Support work to develop comprehensive land policies. This includes support for Government capacity to do strategic, long-term land use planning that protects small holder farmers and helps balance multiple uses of land, including for oil and gas extraction; ■ Implement the recommendations of the RAP, as well as the Alternative Livelihoods Strategy; ■ Ensure that the Community Development Plan addresses issues related to disruption of livelihoods and the promotion of livelihood-related safety networks; ■ Ensure that there is a process to identify all stakeholders (rights holders) of any land take process. While this will mean engaging the individual who indicates that he/she is the rightful land owner, the identification process should consider information from a broad a consultation group. Secondary PAPs, who may not have been immediately identified, but who have utilised the land in some way for a period of up to two decades and longer. This includes the loss of dwellings of secondary PAPs, loss of crops and assets such as mango trees and resultant loss of income; ■ Undertake a full investigation of the allegations that PAPs have been forced to sign documentation and if any allegations are valid, address them comprehensively; ■ Ensure that the RAP comprehensively addresses all aspects of physical and economic displacement experienced by impacted communities, in accordance with the IFC performance standard 5 which addresses the involuntary resettlement and compensation impacts in the project-affected communities; ■ Provide compensation for lost agricultural productivity during the construction period. Adequate notice of the pipeline construction schedule must be provided to PAPs so that they don't unnecessarily lose crops. Cash compensation must be provided based on the cost of planting, labour and fertiliser inputs required to bring the tree or vine to maturity, plus the cost of the lost production for the period it will take a sapling to reach the production level of the tree/vine at the time it is lost to the project; ■ Ensure that the Livelihoods Restoration Plan, as well as the Community Development Plan, provide practical mechanisms and mitigation strategies for the loss of	CNOOC	■ Record of collaboration with Governemnt to undertake strategic Land use planning ■ Resettlement action plan.	Pre-construction implementation with annual monitoring	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				grazing land on the Buhuka Flats as a buffer against out-migration into areas contiguous with the pipeline development area as well as in respect of cultivated land. The extent of household reliance on subsistence food sources should be taken into consideration in this process; ■ Set up an accessible and local “one-stop shop” in the community for all issues concerning the pipeline process to handle aspects such as the provision of basic information, a contact point for emergencies and grievances (whether the concern is related to CNOOC, its contractors or sub-contractors) about work on the project. As part of this process, provide a resource person (potentially a community liaison officer) who is able to provide on-site information to communities on the RAP and associated processes, property and land issues during construction, to monitor and assist the construction contractor’s pre-entry agreement procedure and final re-instatement sign-off with owners and users and for resolving outstanding issues; ■ Provide comprehensive dispute resolution mechanism linked into a coherent two-way communication system (either as part of the ‘one-stop shop” or aligned with it, with associated feedback mechanisms that will be readily accessible and available to all villagers and PAPs). This could be community liaison officers who could be the main point of contact for queries, questions and concerns on property and land issues, as well as directly related to the CNOOC process and programme; ■ Provide either directly, or in collaboration with an appropriate organisation such as the Uganda Human Rights Commission; ■ Ensure that land temporarily used during the construction phase is reinstated to at least the condition it was in prior to construction. This would include all agricultural land, except that needed permanently for the ROW. Agricultural land must be left graded and tilled ready for re-planting. Where land must be re-planted in order to prevent erosion, the regime must be agreed with the landowner; and ■ Implement a precautionary approach to offering cash compensation as an alternative to payment in kind for housing, infrastructure and land losses. CNOOC is aware of the vulnerabilities that could be caused by cash compensation and has instituted a number preconditions prior to moving forward with the payment of compensation. These have included (i) the requirement that men are not able to negotiate cash settlements without their spouses being present during the negotiation and being in voluntary agreement (ii) payment of the compensation into a bank account (where the amount is sufficiently large to warrant this) and where the account has been opened in the name of the husband as well as the wife, with withdrawals requiring the permission and signature of both spouses, and (iii) the requirement that PAPs receive training in financial literacy and business entrepreneurship. CNOOC cannot take sole responsibility for this phenomenon. Additional measures, such as ensuring collaboration				

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				between LC1s, the Uganda Human Rights Commission, the Hoima Police Department Family and Child Services Division and traditional leaders must be considered to address general social as well as intra-household violence and disruption, and this is a Government function.				
	Vehicle movement	Increase in transport risks due to regular travel of construction vehicles on dirt roads along the pipeline corridor Vehicles hauling pipeline construction materials and workers may cause traffic hazards in trading centres or near schools and along narrow roads	Minimizing the impact on vehicle traffic on communities in project areas	■ Ensure that the current CNOOC Land Transportation Specification: Document CUL-QHSE-L3(GE)-023 is further developed in a manner that allows the adoption and implementation of a comprehensive CNOOC driving and vehicle management plan as part of the initial activities which will be adopted for the construction phase. Based on this, CNOOC must adopt the best transport safety practices with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public, as well as creating awareness among the local people and villages about road safety, through the extension of current CNOOC road safety awareness programmes. Other mitigation should include: ▪ Adopting appropriate and comprehensive measures to address emerging/new issues as they arise; ▪ Implementing practical measures such as the enforcement of slow speeds and water spraying to suppress dust from heavy truck convoys on dirt roads; ▪ Ensuring the placement of flag man at trading centres as necessary; ▪ Emphasizing the need to conserve the natural environment through aspects such as avoiding the use of the Bugoma Forest Road and the respect for wildlife; ▪ Emphasising the need to avoid night driving, except in emergency situations; ▪ Labelling all vehicles on the sides with stickers which have recognisable, easy to recall numbers, to assist with ease of identification and subsequent reporting, in case of road safety violations and/or accidents; ▪ Emphasising safety aspects among project drivers, specifically ensuring that drivers respect speed limits through busy and built up areas; ▪ Ensuring the roster and shifts structure for the project allows employees plenty of opportunity for sleep and rest between shifts and on their days off; ▪ Adopting a proactive approach to managing driver fatigue, based on adequate hours of rest to avoid overtiredness; ▪ Avoiding dangerous routes and times of day to reduce the risk of accidents; ▪ Positioning traffic guides at children crossings to control driver speeds and seeking cooperation with local educational facilities (school teachers) for road safety campaigns; ▪ Implementing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions and children crossings;	CNOOC Construction Contractor	■ Record of enforcement for speed limits ■ Presence of flag men at trading centres during material haulage ■ Training records; and ■ Driving and vehicle management plant.	Pre-construction Annually	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				▪ Provision of alternative transport (bus) for the construction workforce; ▪ Ensuring contractors regularly maintain vehicles to minimize potentially serious accidents such as those caused by brake failure commonly associated with loaded construction vehicles; ▪ Ensuring contractors compile a list of service schedules of all equipment deployed on site; ▪ Minimising interaction of pedestrians with construction vehicles through collaboration with local communities and responsible authorities (e.g. police) to improve signage, visibility and overall safety of roads particularly along stretches located near schools or through busy areas; ▪ Considering additional warning tape at accident-prone stretches and sensitive locations (schools & hospitals) if identified as required; and ▪ Developing and implementing road safety awareness campaigns along all transport routes, particularly at centres, school zones and health facilities and collaborating with local communities about education about traffic and pedestrian safety (e.g. one road safety campaign at a nearby location once a month). ■ Partner with the Ugandan Police Force Community Liaison Officers to allow sensitisation of communities on issues related to crime; ■ Ensure that there is timely public notification of planned construction works and close consultation with local communities to identify optimal solutions for road diversions and pedestrian crossings to maintain community access and social links; ■ Provide fencing around the construction and accommodation camp that is sufficiently robust to prevent it from being broken, climbed or breached by employees or local people; ■ Manage the risks of fire through specific management requirements for hot works and through education of personnel about careless behaviour in respect of cigarette smoking; ■ Promote the establishment of village level fire-fighting and emergency preparedness capacity, including the sourcing of fire-fighting equipment capacity; and ■ Promote awareness amongst members of the settlements about potential fire hazards, and mechanisms for promoting household safety from fires.				

	Disruption of Social networks	Disruption of Social networks resulting in; ▪ troubled, discontinuous or fragmented social ties; ▪ dismantled production systems; ▪ individual/ household impoverishment; ▪ relocation of individuals /households ▪ dispersion of kin groups ▪ loss or diminishment of supportive networks	Minimize impacts to Individual, family and community life	■ Establish a sound Community Relations Strategy (CRS) which meets international best practice standards and conventions, all relevant aspects of the Ugandan Constitution and applicable regulations and demonstrates sensitivity and respect for the culture, values and traditions of the affected settlements. The CRS should incorporate real measures that will allow for: ▪ Timely, open and transparent communication and information sharing, including related to preparatory construction activities) in ways and formats that are fully understandable and accessible to villagers regarding the procedures, schedules as well as potential impacts of construction and operational activities in accordance with international best practice for consultation and disclosure; ▪ Provide training and ensure the allocation of sufficient and appropriate resources to ensure that all CNOOC employees, contractors and sub-contractors, including dedicated community liaison officers, are aware of and comply with the CRS as well as with CNOOC's commitments to the communities; ▪ Community liaison officers (or other appropriate resource personnel) to work alongside the construction activities (at the construction camp as well as alongside the pipeline) to assist and advise stakeholders as required; ▪ Active and timely consideration of community views to allow a clear understanding of concerns, expectations and issues and to design and implement appropriate measures for mitigation or remedy; ▪ Develop appropriate objectives and targets that will ensure a process of continuing improvement in respect of community relations management and performance; and ▪ Maintain social and community monitoring programmes and provide accurate, clear and transparent project information to community members as well as other stakeholders as required, including CSOs and the UHRC. ■ Set up a formal complaints procedure to record and address any complaints received. This is in addition to the grievance mechanism described in Box 12-1, which is intended to accommodate issues where compensation for damages is possible). The complaints procedure should include the provision of nominated individuals (potentially community liaison officers) for community members from settlements along the pipeline to address complaints to directly; as well as commitments in respect of response times required to address complaints. Details of the (toll free) telephone number as well as the procedure to be followed for lodging complaints should be distributed to LC1s, as well as at community meetings and via posters to all communities in the vicinity of the working area, the construction camp and close to roads that will experience significant increases of traffic. The procedure must make provision for all calls to be answered in person during working hours and recorded at all other times.	CNOOC	■ Established Community Relations Strategy. ■ Records of communications to communities ■ Records of training for CNOOC personnel in regard to CRS implementation ■ Presence of CLOs alongside construction crew during project activities ■ Record of formal complaints procedure to record and address any complaints received.	Annually	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				Comprehensive details of the complaint, source, the location as well as date and time of the offending event or issue must be recorded. All complaints will need to be investigated, with feedback provided regarding the outcome of the investigation, as well as the steps taken to address the issue. The location of the community liaison team must be widely publicised so that complaints can made in person; and ■ Ensure that provision is made for communities to be provided with the contact number of an appropriate person or persons within CNOOC in the event that the initial complaint is not satisfactorily handled. The resolution of any complaint should, in any case, be dealt with speedily.				

6.10.3 Communicable Diseases (From IFC)

Table 6-24: Communicable Diseases

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Interaction between project workers and Community members	Spread of sexually transmitted infections, Vector based diseases, and Housing and respiratory diseases	Management of disease spread from project work force in the project area Mosquito vector control, avoidance, diagnosis and treatment Pro-active identification of disease Educate and create awareness Appropriate treatment	■ Develop a Communicable Diseases Action Plan as an essential tool in managing disease related impacts; ■ Develop an Employee Health Awareness Policy and ensure its implementation among CNOOC personnel and its contractors or sub-contractors. The policy must provide for: ▪ Extend the current short-term HIV/AIDS testing and counselling services being provided and implement related advocacy, factual data provision, awareness creation as well as behaviour change issues around the transmission and infection of HIV/AIDS in a manner that allows linkages with the Government of Uganda HIV/AIDS related initiatives; ▪ Health awareness training for workers including communicable diseases at induction and then periodically throughout construction; ▪ Awareness raising on communicable diseases for communities close to camps (via posters, leaflets, through health clinics, community meetings); and ▪ Liaison with local health authorities. ■ Implement interventions aimed at reducing the impacts of vector borne diseases through mechanisms such as sanitary improvements and minimising areas where water is impounded as a result of construction activities; ■ Monitor worker compliance with the Code of Conduct; ■ Minimise opportunities for fraternising between workers and members of the community, in particular young girls; ■ Support community sensitisation and youth counselling initiatives aimed at promoting risk-seeking behaviour amongst youth; and Support community-based sensitisation regarding HIV/AIDS, STIs and risks related to early pregnancies. The Construction contractor shall prepare and implement an STI Management Plan designed to minimise the spread of HIV infection and other STIs. The plan shall be prepared with the assistance of a specialist in sexually transmitted diseases. A typical plan would include, among other things, the following measures: ■ An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STIs, to employees, through workshops, posters and informal information sessions; ■ Encouragement of employees to determine their HIV status; ■ Supply of condoms at the construction site(s); and ■ Development of a comprehensive construction Camp Management Plan, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site. ■ The plan shall be submitted to and approved by CNOOC prior to implementation.	CNOOC Construction contractor Public Affairs Coordinator	■ Communicable Diseases Action Plan; and ■ Employee Health Awareness Policy. ■ Records of monitoring for worker compliance with Code of conduct ■ CNOOC-approved STI Management Plan; and ■ Number and nature of initiatives in communities as per the Plan requirements. ■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; and ■ Records of ongoing training of employees in respect of malaria avoidance. ■ Records of medical screening and treatment. ■ Records of education sessions; and ■ Photographs of posters. ■ Documented evidence of appropriate treatment	Annually	Medical Service Management Specification (CUL-QHSE-L3(GE)-015)

				■ The Construction contractor shall prepare and implement a malaria management plan and include vector control, avoidance, diagnosis, treatment, and training; and ■ The plan shall be submitted to and approved by CNOOC prior to implementation. Surveillance and active screening and treatment of workers must be undertaken. Health awareness and education initiatives must be undertaken (e.g. illustrative posters, training, and counselling). ■ Access to medical treatment, confidentiality, and appropriate care must be provided				

6.10.4 Vector Borne Diseases (from IFC)

Table 6-25: Vector-Borne Diseases

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
5.9.13	Construction works leading to creation of areas where seasonal ponding can occur	Spread of vector based & borne diseases in community areas	Mosquito vector control, avoidance, diagnosis and treatment Pro-active identification of disease Educate and create awareness Appropriate treatment	■ The Construction contractor shall prepare and implement a malaria management plan and include vector control, avoidance, diagnosis, treatment, and training. ■ The plan shall be submitted to and approved by CNOOC prior to implementation ■ Surveillance and active screening and treatment of workers must be undertaken ■ Health awareness and education initiatives must be undertaken (e.g. illustrative posters, training, and counselling). ■ Access to medical treatment, confidentiality, and appropriate care must be provided.	Construction contractor Public Affairs Coordinator Environmental Coordinator	■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; and ■ Records of ongoing training of employees in respect of malaria avoidance. ■ Records of medical screening and treatment. ■ Records of education sessions; and ■ Photographs of posters. ■ Documented evidence of appropriate treatment.	Bi-annually	Medical Service Management Specification (CUL-QHSE-L3(GE)-015)

6.10.5 Water quality and availability (From IFC)

Table 6-26: Water quality and availability (From IFC)

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project activities likely to compromise water quality and availability	Contamination of surface water sources	Protection of drinking water sources Ensure water availability	■ Water sources relevant to the project must be managed to ensure water quality meets or exceeds applicable national acceptability standards or in their absence, the latest edition of WHO Guidelines for Drinking-Water Quality. ■ If delivery of water to local communities is necessary, such delivery must be planned and managed in collaboration with the community to ensure sustainable water supply. ■ Project activities must not compromise local water needs and must take account of potential future water requirements in the project area. ■ Agricultural water requirements must be determined and maintained in agreement with local agriculturalists.	Construction contractor Environmental Coordinator	■ No exceedances of Ugandan standards or WHO Guidelines in the absence of Ugandan standards. ■ All community members have access to a minimum of 100 litres per person/ day[13]; and ■ Documented maintenance of agricultural water requirements.	Bi-annually	■ CUL-QHSE-L3(GE)-014 Food & Drinking Water Hygiene Management Specification; and ■ CUL-QHSE-L3(GE)-054 Water Management Specification.

[13] World Health Organization (WHO) defines 100 litres/ capita/ day as the amount required to meet all consumption and hygiene needs.

6.10.6 Structural Safety of Project Infrastructure (From IFC)

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project infrastructure integrity	Structural damage to project infrastructure from natural risks, etc	Avoid hazards and nuisance Structural design must address natural risk Safe and appropriate practices Certification of all structures Minimise hazardous materials No accidental release No incidents Containment of incidents Appropriate safety systems	Physically separate project sites from major potential hazards and the public to avoid exposure to incidents or nuisances (e.g. noise and odour). Project structures must be designed in accordance with engineering and design criteria required by site-specific risk studies (e.g. slope stability, seismic activity, and wind loading. Locally regulated or internationally recognized design and engineering codes must be enforced to ensure structures are designed and constructed in accordance with sound architectural and engineering practice (e.g. aspects of fire prevention and response). All structures must be certified by appropriately qualified professionals to ensure the integrity and appropriateness of the structure. Reduce or eliminate storage of hazardous materials. Enforce processes or storage conditions that minimise potential consequences of accidental releases of hazardous materials. Appropriate maintenance, inspection and control of hazardous materials in line with respective Material Safety Data Sheets (MSDS). Use measures to contain explosions and fires, such as appropriately informing the public, provide for evacuation of surrounding areas, establish safety zones around sites as necessary, and ensure the provision of emergency medical services to employees and the public. CNOOCs Safety specifications must be complied with and identify and address (on an ongoing basis) major risks, applicable codes, standards and regulations, and appropriate mitigation measures. The plan must include as a minimum: ■ Fire prevention; ■ Means of evacuation; ■ Detection and alarm systems; ■ Isolation of hazards; ■ Fire suppression and control; ■ Emergency response plan; and Operation and maintenance.	Construction contractor Environmental Coordinator CNOOC	■ No complaints from public. ■ Ability of structures to withstand identified challenges. ■ Ability of structures to withstand identified challenges. ■ Record of required certifications on file. ■ Records of hazmat storage and disposal. ■ Record of inspections. ■ Record of inspections. ■ Record of public communications; and ■ Demarcation of safety zones; ■ Record of medical services provided. ■ Copies of plan available on site; and ■ Records of drills held.	Pre- site establishment and ongoing	Current International building codes of the International Code Council (ICC, 2006) ■ CUL-QHSE-L3(GE)-027 Behaviour Based Safety Specification; ■ CUL-QHSE-L3(GE)-033 Electrical Safety Specification; ■ CUL-QHSE-L3(GE)-019 Festival and Holiday Safety Specification; ■ CUL-QHSE-L3(GE)-035 Fire Safety Specification; and CUL-QHSE-L3(GE)-040 Industry Safety Specification.

6.11 Waste management plan

The waste management plan for the construction of the Feeder Pipeline is presented in table below. The plan includes the management of hazardous materials, including handling and disposal.

Table 6-27: Waste management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.10.1 5.11.2	Waste generation within project areas	Release of chemicals and substances from wastes	Waste minimization and re-use Minimise toxicity	CNOOC's must implement their Waste Management Specification and manage waste in line with IFC waste management[14], and OGP guidelines for waste management[15] which includes (but is not limited to) the following: ■ Waste must be disposed of safely and responsibly in accordance with relevant local legislation and GIIP; ■ Compliance with the waste hierarchy principle (**Error! Reference source not found.**); ■ Specify the purchase of only the amount of materials required for a specific task; ■ Inventory control and management to avoid surplus, such as use of "just in time" delivery of consumables that have a short shelf life; ■ Purchasing supply contracts must favour bulk purchases to reduce packaging volumes; ■ Bulk supply of products must be in reusable containers (e.g. chemicals in reusable steel tanks rather than plastic drums); ■ Preference must be given to less hazardous and "environmentally friendly" (i.e. biodegradable, inert, recyclable) materials or products and purchasing agreements must allow the return of unused materials or products to the vendor. Chemicals and substances that must be avoided are outlined in ■ ■ Table 6-28 in conjunction with suitable alternatives; ■ Incorporate veterinary concerns into the OHS management plan to include appropriate waste management which mitigates against feral dogs and an awareness of the risk of snake bites and other wild animal threats; ■ All wastes must be segregated, quantified, and recorded to facilitate re-use; and ■ Appropriate community recycling programs must be established and managed.	Construction contractor Environmental Coordinator CNOOC	■ Environmental audit report. ■ Compliance with CNOOC's waste management specification; ■ Documented review of wastes from routine operations as well as incidental and non-routine waste sources (i.e. waste from leak or spill clean-up); ■ Documented characterization of each waste type to hazardous or non-hazardous; ■ Up-to-date waste register; and ■ Appropriate certificates for waste disposal at NEMA certified facilities. ■ As per CNOOC Waste Management Specification; ■ Records of waste collected and recycling; and ■ Manifests of waste collection and disposal at selected municipal waste disposal site. ■ As per requirement; ■ Records of waste collected and recycling; and ■ Manifests of waste collection and disposal at selected municipal waste disposal site. ■ Clean environmental audit report. ■ Clean environmental audit report.	Annually	CUL-QHSE-L3(GE)-053 Waste Management Specification Water management plan

[14] Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: Environmental Waste management (2007) - http://www.ifc.org/wps/wcm/connect/6e4e348048865839b4cef66a6515bb18/1-6%2BWaste%2BManagement.pdf?MOD=AJPERES

[15] Guidelines for waste management with special focus on areas with limited infrastructure; Report No. 413, rev1.1 September 2008 (updated March 2009)

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				Toxicity must be reduced through CNOOC's Waste Management Specification and OGP guidelines that require the use of the following: ■ Non-chlorinated degreasing agents; ■ Water-based paints in preference to solvent-based paints; ■ Biodegradable 'plastics'; ■ Asbestos-free gaskets and insulation; ■ Mercury-free components (this includes lighting); and ■ Hydro-testing using low toxicity (or no) additives. CNOOC's waste management specification details the following which must be complied with: ■ Waste management processes; ■ Waste identification and classification; ■ Waste segregation and storage; ■ Waste transport; ■ Waste disposal; ■ Reporting; ■ Training; and ■ Hazardous waste spill response. CNOOC's waste management specification must be updated monthly as needed. All non-hazardous camp waste shall be collected, separated for recycling, temporarily stored, transported and disposed of in accordance with relevant legislation and the requirements set out in the CNOOC Waste Management Specification. Store all potentially hazardous products in fully secured areas, with an impervious floor, bunded perimeter or walls, and roof to avoid rainfall ingress. Place a PPE storage box and spill kit within immediate vicinity of waste storage areas; All hazardous camp waste shall be collected, classified, labelled, temporarily stored, transported and disposed of in accordance with relevant legislation and the requirements set out in the CNOOC Waste Management Specification. Waste rock must be generated in the escarpment only and must be minimised. Where feasible, waste rock must be returned to the pipeline trench but as a last resort; can be removed to a pre-identified licensed disposal site area along the pipeline right of way, where it will not harm any significant natural resources or be a nuisance to local residents. Sewage waste from workers camps etc. must be treated and disposed of in accordance with Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, S.I. No 5/1999. Reference also needs to be made to World Bank Group EHS Guidelines, Onshore Oil and Gas Development, 2007. Sanitary sewage must be treated to meet the discharge limits of the Company requirements as stated in Table 6-18.		■		

Table 6-28: Chemicals and Substances to be Avoided (OGP Report No. 413, rev1.1 September 2008, updated March 2009)

Substance to be Avoided	Alternatives
Polychlorinated Biphenyls (PCBs)	Silicones, esters, cast resin.
Asbestos	Non-asbestos containing materials (e.g. rock wool).
Pentachlorophenol (PCP) and formaldehyde (biocides)	Glutaraldehyde, Isothiazolin (or other low-toxicity biocides).
Chlorofluorocarbons (CFCs)	CFC alternatives lists can be obtained through: — US EPA – CFR reference, 40 CFR 82 Subpart G Appendices.— UNEP DTIE – Ozone Action Branch.
Leaded paints	Unleaded paints. Also, water-based or low-volatility solvent formulations.
Chlorinated solvents (e.g., carbon tetrachloride, 1,1,1-trichloroethane, trichloroethylene)	Non-chlorinated hydrocarbon-based solvents, steam cleaning.
Heavy metals (in reverse emulsion breakers, barite and grit blast)	Polymer (non-latex)-based formulation, low-metals concentration barite and grit blast.
Mercury (in pressure-measuring devices/ instrumentation)	Differential pressure cells/ transmitters, pneumatic or electronic instrumentation.
Lead naphthenate (lubricant)	Lead-free lubricants.
Leaded thread compound	Lead-free thread compounds (for tubing and casing).
Chromate corrosion inhibitors	Sulphite or organic phosphate corrosion inhibitors.

6.12 Cultural heritage

The Cultural heritage management plan for the construction of the Feeder Pipeline is presented in Table 6-29.

Table 6-29: Cultural heritage management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Land clearing and excavations along the pipeline corridor Collection of cultural heritage remains	Destruction of surface heritage and buried materials at known cultural heritage sites near the construction works	Appropriate management of cultural heritage Identification of all cultural heritage sites Avoidance of known cultural heritage sites near the construction works Preservation of all cultural heritage remains Maintain community	■ CNOOC's Cultural Heritage Specification must be updated prior to construction and complied with in conjunction with the Historical Monuments Act (Cap 46), 1968, Uganda National Culture Centre (Cap 50), 1959 and the National Culture Policy, 2006. ■ There is potential for the disturbance of previously unidentified archaeological material (i.e. accidental damage or chance finds). Prepare a project-specific, 'site ready', Chance Find Procedure. The Chance Find Procedure must be updated during the course of construction to make provision for a course of action in the event that any cultural heritage artefacts are recovered. It must be presented to the relevant local authority and the National Museum for approval. It must also be provided to all contractors and consultants on the project site during all pre-construction and construction activity and incorporated within the project's 'site induction' process. It must remain in place	CNOOC Construction contractor CNOOC CLO Construction contractor ESO / ECO Specialist Environmental Consultant	■ Documented compliance with relevant legislation, CNOOC's Cultural Heritage Specification and IFC performance standard 8 for cultural heritage. ■ Inclusion of updated and geo-referenced cultural heritage site listings in the FP C-ESMP. ■ Absence of damage to any cultural heritage site; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Inclusion of cultural heritage sensitisation in induction	Annually	■ Pre-construction planning requirements; ■ CNOOC's Cultural Heritage Management Specification; ■ IFC performance standard 8: cultural heritage; ■ Historical Monuments Act (1968, Cap. 46); ■ Uganda National Culture Centre (1959 Cap 50); and ■ National Culture Policy (2006).

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
			access to cultural heritage sites Preserve cultural heritage Up-to-date CHMP Implement a watching brief Avoidance of Cultural heritage sites	throughout construction. The Chance Find Procedure is to be a component of a detailed Cultural Heritage Management Plan (CHMP) (as required by IFC PS 8); ■ Where there are known gaps in the archaeological field survey, specifically those inaccessible areas along the pipeline route, assess these immediately in order to fully capture a complete archaeological baseline for the project and eliminate the risk of archaeological induced delays during the construction phase; ■ Hold an urgent discussion with CNOOC to determine strategies for avoidance of those potentially highly sensitive archaeological sites identified within, or in close proximity to, the project footprint, which include sites within the Central Processing Facility; Pads 3 and 4A; the materials yard / the camps; and the jetty area; ■ Undertake a further stage of cultural heritage study, as a priority, to verify the association (if any) of those surface artefacts recovered and potential sub-surface archaeological features indicative of settlement/industry. This would comprise shallow, targeted, hand-dug test pits (e.g., 1 m x 1 m in size) through which the archaeological potential could be firmly established and any further material analysis undertaken. This excavation programme will seek to eliminate the risk of archaeologically-induced delays during the construction phase; ■ Implement a programme of pre-construction mitigation in the event that these targeted sites yield archaeological material. Avoidance (preservation *in situ)* is preferred however “preservation by record” through systematic recording (e.g., archaeological excavation) can be undertaken to account for atefacts discovered during construction activities. Such work, where required, must be described in appropriate detailed work programmes and specifications to be prepared by the cultural heritage specialist. To meet the requirements of Ugandan law this work should be carried out by a suitably qualified person under a licence for archaeological survey as issued by the Department of Museums and Monument. In the event of artefact recovery, all materials should be surrendered to the National Museum; and ■ Monitor the impact of construction on archaeology in the form of a ‘watching brief’, if necessary, once the test pitting exercise has better established or dismissed the extent of any below-ground archaeological potential. The watching brief will occur during all ground intrusive activity which form part of the construction phase and include an archaeologist in attendance. The watching brief will involve monitoring soil removal / land take for the presence of cultural heritage material. The archaeologist must have the authority to stop construction work in the event that significant materials (e.g., burial sites, iron furnaces) are exposed. These sites will be recorded in full employing ‘preservation by record’. The results of the watching brief must be presented to the relevant local authority. Provisions should be made to exhibit materials to interested stakeholders, including the local community.	CNOOC Social Performance Manager	programme(s) and contractor tool box talks; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Records of communication with communities; ■ Maintenance of access, as agreed; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Records of training of site personnel; and ■ Compliance with CFP ■ Up-to-date CHMP that addresses needs of individual sites; ■ Community approval of CHMP methodologies; and ■ Compliance with local legislation and IFC performance standard 8 for cultural heritage. ■ Up-to-date CHMP; ■ Documentation of suitably qualified persons; ■ Communication and submission of all artefacts to National museum with National museum; and ■ Documented watching brief reports submitted to local authorities. ■ Photographic evidence of adequate demarcation; ■ Documented community engagement and approval; ■ Adequate community access to sites; and ■ CHMP awareness training of contractors and signed attendance registers.		■ Cultural Heritage Report (2018). ■ ■ ■ ■ ■

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				Cultural heritage sites shall be updated, based on the investigation associated with each activity, and any sites within 500 m of construction activities shall be included in FP C-ESMP. Heritage sites shall be georeferenced for easy identification in the field. Where project infrastructure is within 100 m of a cultural heritage site, the area shall be flagged for special attention. In such cases, the precise location of the site shall be confirmed with members of the local community. All construction team personnel, particularly operators of vehicles and heavy equipment, shall be made aware of the site and advised of its importance. If considered necessary by CNOOC, in consultation with local community representatives, the site shall be temporarily fenced or demarcated to protect it from damage. The Contractor shall respect local intangible cultural heritage, tradition and taboos during construction to ensure that the negative socio-cultural effects are effectively managed. The collection of archaeological or other cultural artefacts found on site by contractor personnel shall be prohibited. Community access to sacred sites shall, where necessary, be maintained during the construction period. Access requirements shall be determined by the CLO in consultation with local communities. ■ The Chance Finds Procedure (CFP) pre-construction planning requirements (Section 5.1) must provide the necessary mitigation strategy for accidental finds discovered during construction site work. ■ The Contractor must minimise the risk of accidental damage to heritage sites by implementing the (CFP). The Environmental Coordinator (EC) and ESO/ECO shall undergo training provided by a qualified specialist in order to improve their capability to identify archaeological and paleontological finds. ■ In the event of a Chance Find for which the EC determines a professional archaeologist's opinion is required, no further construction work shall be undertaken at the site archaeologist has seen the find and made a recommendation. ■ The 'site ready' Cultural Heritage Management Plan (CHMP) for the Feeder Pipeline must be updated as needed and must highlight the presence of culturally significant places to contractors at an early stage and specify further management necessary (e.g. demarcation/ signage) as required for individual sites – i.e. cemetery sites close to the route. The CHMP must seek to manage and mitigate the identified impacts on cultural resources throughout the Project lifetime in co-operation with local communities and appropriate site guardians. ■ The CHMP must set out a strategy for maintaining community access to cemetery sites; facilitating respect for local intangible cultural heritage, tradition and taboos, while mitigating negative socio-cultural effects through regular platforms for community liaison. A 'watching brief' (with an archaeologist in attendance) must take place where ground intrusive activity occurs (e.g. excavation).				

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				The specifics of the investigation must be included within the CHMP and include the following to meet the requirements of Ugandan law: ■ A suitably qualified person under a licence for archaeological survey must be present where ground intrusive activity occurs; ■ In the event of artefact discovery, all materials must be surrendered to the National Museum; ■ The watching brief must involve monitoring of soil removal / land take for the presence of cultural heritage material. The archaeologist must have the authority to stop construction work if significant materials (e.g., burial sites, iron furnaces) are exposed. These sites must be fully documented and described in full through a 'preservation by record' methodology; and ■ Results of watching briefs must be presented to the relevant local authority with provision made to exhibit materials to interested stakeholders, including the local community. Once Project infrastructure is finalised, site specific mitigation may be required during construction. The details of such mitigation should be prepared for inclusion within the Project specific Cultural Heritage Management Plan (CHMP) and include: ■ Demarcation of 'no go' sensitive areas (e.g. cemeteries) and enforcement of avoidance. Although these sites may not be directly affected by construction activities there is a potential for disturbance of community access routes to cultural sites and to the environmental setting of the sites themselves; ■ Enhancement or protection of environmental setting in conjunction with local community approval (e.g. through planting/ screening); ■ Demarcation of areas to be avoided by noisy, dust inducing construction vehicles at certain times of the week/year to avoid disturbance of traditional ceremonial activities close to construction routes. If such ceremonies take place, the CLO is to identify them and CNOOC is to evaluate if additional mitigation measures are necessary; ■ Maintaining community access to sacred sites; facilitating respect for local intangible cultural heritage, tradition and taboos, while mitigating negative socio-cultural effects through regular platforms for community liaison; and ■ Culturally significant places must be highlighted to contractors at an early stage and further managed (e.g. through demarcation/ signage) as required. Provisions for this must be incorporated into the 'site induction' process and detailed fully with the CHMP.				

6.13 Pollution prevention and response management plan

The pollution prevention and response management plan for the construction of the Feeder Pipeline is presented in Table 6-30. The plan also includes oil spill response management.

Table 6-30: Pollution prevention and response management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Use of hazardous materials a Generation of wastes at storage sites and in work sites Containment Leak detection and corrosion management	Spillages of chemicals, wastes from containment Oil spills from Vehicles and equipment and oher incidental discarded material and waste	Spill prevention and response management Containment of hazardous material Monitor, minimise and manage leakage	■ Compliance with CNOOC's spill prevention and control specification in conjunction with the latest IFC general EHS guidelines for hazardous materials management[16] and relevant independent risk assessment (i.e. WorleyParsons Oil Spill Planning and Response: Kingfisher Field, 2017). ■ The following must be implemented: ▪ Spill kits to be available on sites where handling of chemicals occurs; ▪ Regular inspection of all chemical and diesel storage tanks during the project; ▪ Report all spills or chemical contact immediately to supervisor; ▪ If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials; ▪ Any spill clean-up is to be appropriately contained and disposed of by a contractor appropriately licenced with NEMA; ▪ If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure; and ▪ Materials used for the remediation of spills must be used according to product specifications and guidance for use. ■ Secondary containment must be installed for equipment that contains hazardous materials (e.g. hazardous material storage areas, vessels, and tanks) to contain accidental releases. ■ In line with IFC hazardous waste materials management, secondary containment must be made of impervious, chemically resistant material and able to safely contain the larger of 110% of the largest tank or 25% of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 litres. In the event of a release, contained hazardous materials must not encounter incompatible materials which may cause further hazards (e.g. toxic fumes, fires and explosions). Piping, process equipment and storage tank designs and construction processes must be appropriate to manage corrosion and potential leakage based on the life of infrastructure, and include: ■ Compliance with the current GIIP standards, as applicable (e.g. American Petroleum institute standards, see project codes and standards in APPENDIX A);		Spillage case Frequency of Spillage Amount of Spillage Type of spillage Sources of spillage	Quarterly monitoring	■ CUL-QHSE-L3(GE)-059 Spill Prevention and Control Specification; ■ WorleyParsons Oil Spill Planning and Response: Kingfisher Field, 2017; ■ KF-FD-RPT-GEN-SA-1007 Safety Case Report REVB; ■ CNOOC's Emergency response philosophy (KF-FS2-RPT-CPF-SA-0009 REV0); and ■ Emergency Preparedness and Response procedure (CUL-QHSE-L2-010, version A). ■

[16] IFC Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: environmental hazardous materials management

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				■ Corrosion protection (cathodic protection and corrosion allowance); ■ Pressure monitoring system and automatic pressure loss detectors; ■ Inlet/outlet process safety control Emergency Shut Down (ESD) system; ■ Pipeline leak monitoring system (PLMS) which can detect 1% of designed throughput in 10 minutes; ■ Concrete lining of valve stations; ■ Approved (GIIP) or certified integrity testing methods at regular intervals; ■ Scour protection where the pipeline crosses rivers; and ■ An insulation jacket for the pipeline as part of the heat tracing.				
	Use of hazardous materials Generation of waste Maintenance and inspection	Spillages of chemicals, wastes from containment Oil spills from Vehicles and equipment and oher incidental discarded material and waste	Prevention of overfill Identify all risks related to spill or release of hazardous materials	Overfills of vessels and tanks is a common cause of spills and must be addressed through CNOOC's spill prevention and control specification (which is typically aligned with IFC recommendations) as follows: ■ Checklist of measures to follow during filling operations and the use of filling operators trained in these procedures (see CNOOC Spill prevention and control specification); ■ Installation of gauges on tanks to measure internal volumes; ■ Use of dripless hose connections for vehicle tank and fixed connections with storage tanks; ■ Provision of automatic fill shutoff valves on storage tanks to prevent overfilling; ■ Use of a catch basin around the fill pipe to collect spills; ■ Use of piping connections with automatic overfill protection (float valve); ■ Pumped volumes must be less than the available capacity of tanks or vessel; and ■ Use of overflow valves or pressure relief valves so that excess hazardous substances can be released (and safely contained) when necessary. ■ A maintenance programs must include regular pigging to clean the pipeline and intelligent (e.g. magnetic flux leakage) and ultrasonic pigging should be considered as required. ■ Spill control equipment and materials must be inspected monthly to confirm that all specified equipment is always available and that the equipment has not been utilized for alternative purposes. All activities, equipment, and areas associated with hazardous material (e.g. in storage, handling, maintenance) must be identified and managed appropriately.	Monthly (or as required)	■ Documented inspection at each site. ■ Documented critical equipment/operation spill control.	Quarterly monitoring	■ CUL-QHSE-L3(GE)-059 Spill Prevention and Control Specification; ■ WorleyParsons Oil Spill Planning and Response: Kingfisher Field, 2017; and ■ KF-FD-RPT-GEN-SA-1007 Safety Case Report REVB. ■ CUL-QHSE-L3(GE)-059 Spill Prevention and Control Specification; ■ Pre-construction planning requirements

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Offloading of chemicals, servicing and/or refuelling of equipment and vehicles Discharge of effluent Storage	Risk of spills causing contamination in surface waters	Prevent contamination of surface water from equipment and/or vehicle spillages Safe storage No contamination of water resources	■ Soil contaminated by chemicals, fuel or oil spills, will be collected for treatment at a pre-determined and dedicated location, or will be treated in situ using bioremediation, in accordance with existing procedures; ■ Vehicles will be maintained regularly and kept in good working order; ■ Chemical storage areas will be adequately bunded to prevent chemicals from entering the storm water system; and ■ Vehicle maintenance will not be carried out on the site, but in contractor workshops as appropriate. ■ Effluent must be treated to acceptable standards prior to discharge (see Table 6-18 in Water Management plan). ■ ■ All chemicals stored indoors must have adequate ventilation that maintains ambient air below the corresponding occupational exposure limits and below the threshold limit values. ■ Containers and tanks must be legibly labelled to identify the type of material contained within container/tank and the associated hazards. ■ Equipment relevant to chemicals/fuel on site must comply with the relevant MSDS. ■ Secondary containment must be provided for any stored contaminated material and must also be regularly inspected to identify signs of deterioration, cracking, or general damage to containment. Any signs of damage must be addressed. ■ Provision of emergency shower and eye wash station where handling of hazardous materials occurs. ■ Metal drums shall not be stacked more than four (4) high. Containers shall only be stacked four (4) high on on a level, concrete or otherwise stable surface. ■ Plastic drums that are 55 gallons and Tote tanks less than 375 gallons will not be stored more than three (3) high. Containers shall only be stacked three (3) high when placed on a level, concrete or otherwise stable surface. ■ Acids, flammables, combustibles, and oxidizers must not be stored next to or near battery chargers, electric panels, or equipment with the potential for arch flash, sparks, or electrical discharges. ■ Maintain a list of chemicals that are stored or dispensed at the location and identify the hazards associated with the chemicals. ■ Maintain a current SDS for all chemicals on site. The MSDS for each chemical must be available in the area where the chemical is stored or dispensed. ■ All chemical and diesel tanks to be fitted with impermeable secondary containment with a minimum capacity of 110% of the largest tank volume. ■ Spill kits must be available at storage sites.	Construction contractor	■ Photographs showing appropriate management actions; ■ Records of observations in ESO/CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues. ■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues. ■ ■ Photographs showing appropriate management actions; ■ Records of observations in ESO/CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues.	Quarterly monitoring	Water use Management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project activities likely to lead to spills	Chemical and fuel spillage	Adequate response to spills	■ Spill kits to be available on sites where handling of chemicals occurs. ■ Regular inspection of all chemical and diesel storage tanks during the project construction. ■ Report all spills or chemical contact immediately to supervisor. ■ If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. ■ Any spill clean-up is to be appropriately contained and disposed of by a contractor appropriately licenced with NEMA. ■ If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. ■ Materials used for the remediation of spills must be used according to product specifications and guidance for use.	Construction contractor ESO/ CLO	■ Photographs showing appropriate management actions; ■ Records of observations in ESO/CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues.	Quarterly monitoring	

6.14 Emergency management plan

CNOOC's Emergency Response Plan (ERP Rev. B) establishes procedures to manage and coordinate the mitigation and control measures after an emergency. The ERP must be updated regularly and incorporate the management actions outlined in Table 6-31 as a minimum.

Table 6-31: Emergency management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Maintenance works and project activities involving hot works, offloading and filling operations, naked fires,	Risks associated with leaks, spillage, fire hazards, hot works, electrical hazards,	Prevent and minimise accidents	The management system must be implemented and it must include the following general elements: ■ Define the roles and responsibilities of personnel involved in the management of construction during the project execution; ■ Identify the training needs of such personnel and provide the training identified; ■ The roles, responsibilities, accountability, authority and interrelation of all personnel who manage, perform or verify work, which affects safety, should be defined with sufficient manpower provided; ■ Employees and others, for example contractors, present on site, should be involved in the arrangements and their implementation. Particular attention should be paid to contractors to ensure they receive the necessary information and training. They need to be aware of the hazards involved and the roles and responsibilities of key personnel; ■ Adoption and implementation of procedures for systematically identifying hazards arising from construction activities and transport and the assessment of their likelihood and severity; ■ The safety management system should describe how hazard identification and evaluation procedures are applied to all relevant stages of construction; ■ Adoption and implementation of procedures and instructions for safe construction, including transport to and from the site;	Project Manager and Contract manager	Upkeep and documented reporting of the following where applicable: ■ Fugitive leaks; ■ Spillages; ■ Ignition sources; Firefighting equipment; ■ Hot work permit; ■ Maintenance permit to work; ■ Offloading and filling operations; ■ Flame proof electrical equipment; ■ Filling arm hose integrity; ■ Pipe condition; ■ Relief and blow down devices; ■ Alarm, interlock and trip testing; ■ Filling batch meter calibration and shut off; ■ Tank bund integrity; ■ Water deluge on fuel tanks; ■ Near miss incidents related to the process risks; and	Throughout project construction and operation life cycle with annual monitoring	■ CNOOC's Emergency response philosophy (KF-FS2-RPT-CPF-SA-0009 REV0); and ■ Emergency Preparedness and Response procedure (CUL-QHSE-L2-010, version A).

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				■ Management of change - adoption and implementation of procedures for construction modifications; ■ Planning for construction and road transport emergencies by adoption and implementation of procedures to identify foreseeable emergencies; prepare, test and review plans to respond to such emergencies; and provide specific training for all construction and transport personnel; ■ Monitoring performance by adoption and implementation of procedures for the on-going assessment of compliance with set objectives, and the mechanisms for investigation and taking corrective action in the case of non-compliance; and ■ Audit and review of the construction and transport accident prevention measures by adoption and implementation of procedures for periodic systematic assessment and the effectiveness.		■ Institute a management of change system for modifications.		
	Maintenance works and project activities involving hot works, offloading and filling operations, naked fires,	Risks associated with leaks, spillage, fire hazards, hot works, electrical hazards,	Develop specific preventative and protective measures	**Specific preventative and protective measures should include (but not limited to):** **i)** *Provision of special services (but not be limited to) the following:* security; gas sampling; water levels; soil monitoring/ sampling; explosives; atmospheric monitoring; noise measurements; cleaning services; and precautions for work in confined spaces. ii) *Emergency services required*: Fire; medical & first aid; routes for emergency vehicles; Safety showers; eye-wash facilities; breathing and escape sets; Means of escape (ladders etc.); Handling of accidents on site. *iii) Movement, loading and unloading:* Access/egress for people, plant and equipment; parking; Unloading/loading areas; turning circles; routing; barriers; Tankers, lorries; dumper trucks; cranes; forklifts; Mobile units (pumps, compressors); and Effects on existing site traffic and adjacent public roads; traffic control. *iv) Working conditions during construction:* Noise (compressors; explosion; drills, etc.); time of day, frequency and intensity. Smoke; dust; vehicle fumes; Climatic effects on construction activities (wind, rain, heat, cold; fog). *v) Waste handling:* Wash water; storm/flood and fire water/foam; Contamination and damage to existing drains and sewers; Spillage's of chemicals, oil, fuel; Means of disposal and licence. Bunds; pits; sumps; drain isolation; dredging; draining. Tenting; fencing; temporary sheeting; scaffolding. *vi) Construction work safety:* Excavators; warning signs; What effect on live plant equipment? What precautions? How will it be coordinated/supervised? Any checks or tests needed? Is it a recognised safe practice or one-off? Is timing critical? Is access/egress and boundary security satisfactory? Work at heights or elevations; Confined	Project Manager and Contract manager	Upkeep and reporting of: ■ Fugitive leaks; ■ Spillages; ■ Ignition sources; ■ Firefighting equipment; ■ Hot work permit; ■ Maintenance permit to work; ■ Offloading and filling operations; ■ Flame proof electrical equipment; ■ Filling arm hose integrity; ■ Pipe condition; ■ Relief and blow down devices; ■ Alarm, interlock and trip testing; ■ Filling batch meter calibration and shut off; ■ Tank bund integrity; ■ Water deluge on fuel tanks; ■ Near miss incidents related to the process risks; and ■ Institute a management of change system for modifications.	Throughout project construction and operation life cycle with annual monitoring	CNOOC's Emergency response philosophy (KF-FS2-RPT-CPF-SA-0009 REV0) and Emergency Preparedness and Response procedure (CUL-QHSE-L2-010, version A).

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
				spaces; Excavations, trenches, underground; Access for erection and installation, vehicles, cranes *vii) Management and supervision:* Guidance to construction traffic (route plan, signs etc.) Obstruction to normal traffic/emergency vehicles (cranes, contractors' vehicles) Increase in site traffic - implications? Size of vehicles (pipe bridge clearances?) Quality of safety equipment and signs on new plants (support and fixing durable?) Personal safety equipment (attitudes/quality) Standards of work, safety, cleanliness (contractors' vehicles, tools, methods of working) viii) *Coordination and organising:* Permits to work etc. (linking with plants & service groups - encourages co-operation); Training and awareness; Communications (who needs to know, why, when) *ix) Auditing and inspections:* Safe working practices (e.g. scaffold-tags, permits, safety equipment etc.); Knowledge of the contractor (does he understand? does he know?)				

6.15 Influx Management plan

The Influx Management Plan for the construction of the Feeder Pipeline is presented in Table 6-32.

Table 6-32: Influx management plan

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	Recruitment of workers on the project	Impact on community resources	Develop and implement an overarching communication strategy to handle all CNOOC strategies in employment process	A Communication Plan shall be prepared including national coverage and community communication campaigns, starting prior to establishment on site, and communicating the following CNOOC policies: ■ No hiring of job seekers on site; ■ No procurement at the gate; ■ Employment selection in agreement with agreed procedures by the Community Liaison Forum; and ■ Maximising local content in procurement (i.e. from local people and towns whenever project requirements are met).			Throughout project lifecycle with annual monitoring	

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
	In-migration by opportunity seekers	Impact on community resources and social cohesion	Early communication of CNOOC recruitment strategy	■ Engage closely with government to monitor land ownership and changes thereto surrounding the project development; ■ Implement the recommendations of the Influx Management Strategy and Framework Plan (Volume 4, Specialist Study 11); and ■ Prepare to accommodate the changes arising from the population influx by sensitising the LC system. This is particularly important, as it is at this level that the stability of a village is decided, including the establishment of checks and balances for maintaining individual rights and responsibilities, and for managing crime; ■ Assist Government to plan, develop and implement community infrastructure and support that improves the living conditions of project-affected people; ■ Implement the Community Development Plan and the Alternative Livelihoods Restoration Plan that offers practical mechanisms and mitigation strategies for the loss of grazing land caused by the project and the general loss of resources caused by increasing populations; ■ Plan locations for hiring labour to avoid attracting job seeking migrants to the front gates of the various project work areas and into sensitive communities. Ensure that the EPC and Drilling contractors comply with these requirements; ■ Provide timely information about the size and demographic make-up of the project construction workforce to service providers including any potential additional requirements to adequately respond to potential emergencies; ■ Provide, at all times, paramedical services on site during construction as well as general rescue and emergency management services to minimise pressure on local resources; ■ Communicate effectively with stakeholders including information regarding available employment opportunities and the manner in which appointments will be made, to help limit the extent of in-migration; ■ Maintain ongoing community communication strategies to keep affected communities informed about changes in the project; ■ Finalise the Influx Management Strategy and Framework Plan to identify appropriate measures to mitigate the expected in-migration from the presence of the project; and ■ Use the Grievance Redress Mechanism for aggrieved community members affected by project related activities.	CNOOC CLO Social Performance Manager	■ A comprehensive communication plan ■ Inclusion of recruitment issues in the Communication Plan. ■ Records showing the implementation of the Community development plan ■ Record of CNOOC collaboration with Government ■ Plan indicating location for labour hiring ■ Record of communication in time regarding size and demographic make-up of the project construction workforce ■ Evidence of paramedic provision on site ■ Documented Community Grievance Redress Mechanism ■ Influx management strategy.	Throughout construction with monitoring of influx annually	

6.16 Ecosystem services management plan

The ecosystem services (ES) management plan for the construction of the Feeder Pipeline is presented in Table 6-33. Management actions are taken from specialist studies that are specific to potential impacts on the supply of ecosystem services and IPIECA/OGP guidelines for oil and gas project impacts and dependencies on ES (IPIECA, 2011).

6.16.1 Food provision Ecosystem Services

Table 6-33: Food provisioning ecosystem services

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project activities in grazing areas	Increased pressure on pastures	Compensation for loss of grazing	Economic displacement of herding communities has been addressed in terms of the IFC Performance Standard 5 through a Resettlement Action Plan (RAP). The RAP includes provision in the entitlement matrix (see Table 6-34) to compensate people with customary rights for loss of grazing. The RAP will be updated with an independent livestock assessment and include: ■ A management component to address impacts to livestock; andA livelihood restoration plan with mitigation strategies for the loss of grazing land. Undertake pasture enhancement program to plant more pasture for the remaining grazing land as an offset for the pastoralists on the communal grazing lands The project must (where feasible) support: ■ Local sustainable food economies (i.e. markets that do not significantly diminish the capacity of a food source to replenish itself). For example, only sustainable, established and locally sourced meat should be purchased	CNOOC	■ Compliance with entitlement matrix (Table 6-34); ■ Appropriate independent livestock assessment and management plan; and ■ Compliance with Livelihood Restoration Plan. ■ Compliance with community development plan.	Bi-annual monitoring	■ Ecosystem Services Review and Assessment for the Kingfisher Field Development Area in Hoima & Kikuube Districts, Uganda (2018); ■ CNOOC KFDA RAP Project 2016 – Phase 1 Resettlement Action Plan (2017); and ■ Pre-construction planning activities.
	Project induced in-migration	Increased pressure on fisheries	No wildlife harvesting Control of food sourcing	■ Enforcement of a complete ban on wildlife harvesting (hunting/ trapping/ fishing) for all Project personnel. ■ No personnel and/or contractors allowed beyond footprint of Project. ■ Inclusion of a construction camp with mess facilities for locally-hired staff to control food provision. The mess-facility must be the primary means of food provision and employees must be discouraged from using local external food sources (e.g. unsustainable fish markets).	CNOOC Contractor	■ No personnel and/or contractors beyond footprint of Project; ■ Complaints registered in grievance procedure; ■ Observed personnel and/or contractors outside of project footprint; and ■ Identification of personnel and/or contractors that do not use project mess facilities. ■ Identification of personnel and/or contractors frequenting external food sources; and	Bi-annually	■ Biodiversity management plan; and ■ Fish Act (Cap 197, 1951).

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project induced in-migration	Increased harvesting of plant species used for traditional home construction, increased fire frequency, increased grazing pressure and pressure on capture fisheries as well as hunting for wild animals	Support for sustainable local industry Promotion of scientific studies and monitoring No wildlife harvesting Awareness of wild food issues Control of food sourcing	Supporting local communities in developing sustainable farming, ecotourism or other activities that provide alternative food sources and income. Support scientific studies and monitoring programs aimed at assessing the sustainability of using local resources, as part of impact mitigation programs. ■ Enforcement of a complete ban on wildlife harvesting (hunting/ trapping/ fishing) for all project personnel. ■ No personnel and/or contractors allowed beyond footprint of Project. Worker and community education programme focussing on the impacts and risks of bush meat hunting (e.g. disease) to be incorporated into the Community Development Plan. Inclusion of a construction camp with mess facilities for locally-hired staff to control food provision. The mess-facility must be the primary means of food provision and employees must be discouraged from using other food sources (e.g. bush meat). Support enhancement of fisheries resources through awareness programs and fish cage farming Continue with the pasture enhancement program through planting of more pasture	CNOOC Contractor	■ Compliance with Livelihood Restoration Plan. ■ CNOOC supported studies and monitoring (documented) by suitably qualified professionals. ■ No personnel and/or contractors beyond footprint of Project; ■ Complaints registered in grievance procedure; ■ Observed personnel and/or contractors outside of project footprint; and ■ Identification of personnel and/or contractors that do not use project mess facilities. ■ Complaints registered in grievance procedure; ■ Identification of personnel and/or contractors frequenting external food sources; and ■ Identification of personnel and/or contractors that do not use project mess facilities.	Annually	CNOOC KFDA RAP Project 2016 – Phase 1 Resettlement Action Plan (2017). Biodiversity management plan

Table 6-34: Entitlement Matrix (CNOOC KFDA RAP Project 2016 – Phase 1 Resettlement Action Plan; 2017).

Type of loss	Category of Affected Person	Entitlement	Eligibility
Dwelling used as primary residence	Owners who occupy affected dwellings	**In kind-** Replacement house of equivalent size (measured floor area or number of rooms) with consideration of functional spatial use. Choice of standardized replacement house designs that comply with building/ planning standards and that take spatial and cultural function into consideration. House constructed from durable wall and floor materials and with permanent roof. Materials may be salvaged at the owner's expense and if project schedule allows this. ■ Disturbance Allowance base on valuation of original property lost and all transport costs to new place of abode for all movable assets; and ■ The relocated persons will be provided with legal land tenure in places where they will be relocated. OR **Cash-** Compensation at full replacement cost based on professional valuation: ■ Disturbance Allowance; and ■ Transport allowance will allow for move of up to 100 km from point of displacement. OR **In kind/cash combination-** Compensation for area of dwelling not replaced based on agreed rate per square meter for existing materials and finishes: ■ Cash for non- typical/ special finishes (floor and/or wall tiling, fitted kitchens and bathrooms) based on assessment of replacement value by registered valuer; ■ Disturbance Allowance base on valuation of original property lost and all transport costs to new place of abode for all movable assets; and ■ The relocated persons will be provided with legal land tenure in places where they will be relocated.	■ Houses completed and occupied at cut- off date and identified through final asset surveys; ■ Ownership established through final asset surveys; ■ Cash option available to homeowners with proven and verified alternative dwelling suitable for household members identified during final census survey; ■ Combination of cash and in kind package for homeowners who prefer a smaller replacement house and the balance paid in cash for improved finishes assessed on case- basis; and ■ Cash compensation eligibility rules to be further developed.
Dwellings used for secondary purposes (rental houses, free accommodation for relatives, etc.)	Owner of residential structure	■ **Cash** – Compensation at full replacement cost (taking replacement standard of durable material and permanent roof into consideration) based on professional valuation; and ■ Disturbance Allowance.	■ Complete houses at cut-off date, identified through final asset surveys; ■ Ownership established through final asset surveys; and ■ Where dwelling is occupied and used to earn income (livelihood), preference is for replacement house with continuation of tenancy agreement to avoid displacement of tenants.
Sanitation facilities	Owners of residential, commercial and other buildings	**In kind** – Provision of on-site composting latrines, one per affected household or per physical planning standards.	■ Facilities in place and used for designated purpose at cut-off date and identified through final asset surveys; and ■ Physically displaced households, businesses and other community buildings identified through final census and asset surveys
Non-residential privately-owned buildings including commercial buildings, constructed with permanent materials	Owner of building	■ **Cash** – Compensation at full replacement cost based on professional valuation; and ■ Disturbance Allowance.	■ Complete building at cut-off date, identified through final asset surveys; and ■ Ownership established through final asset surveys.
Moveable and other structures such as fences, livestock enclosures, bridges, fish ponds, livestock water points, etc.	Owner of structures	**Cash** – Compensation at full replacement cost for affected structures based on assessment by registered Valuer.	■ Ownership established through final asset surveys; and ■ Structures in place at cut-off date and identified through final asset surveys.
Incomplete buildings and structures	Owners of incomplete structures	■ **Cash** – Compensation for incomplete buildings and structures based on assessment by registered Valuer and based on % of completion; and ■ Materials may be salvaged at the owner's expense.	■ Incomplete at cut-off date, identified through final asset surveys; and ■ Ownership established through final census and asset surveys.

Type of loss	Category of Affected Person	Entitlement	Eligibility
Land for Residential Plot – permanent loss	Registered owner or claimants of customary held land on which complete immoveable housing structure is established Registered leaseholders on public land on which complete immoveable housing structure is established	■ **Cash** – Where in-fill resettlement is possible on the remainder of the affected parcel of land or the existing community, or where the household owns land for residential use elsewhere which they choose to occupy as primary residence, compensation in cash for surveyed land at agreed rates; or ■ **In kind** – Where in-fill resettlement on the remainder of the affected parcel of land or within existing community is not possible, provision of standardized housing plot on planned resettlement site. Settlers will be given the same security of tenure as their displaced land, but a Customary Certificate of Ownership (CCO) as a minimum.	■ Persons must prove ownership of complete immoveable housing structure and in land (not necessarily through title20) at the time of final asset surveys. ■ Persons must prove ownership of a suitable house elsewhere to qualify for cash compensation.
Permanent loss of agricultural (crop) land	Registered owners or claimants of customary held lands	■ **In kind** – Package to empower farmers to find their own replacement agricultural land of same size, or an amount of land with equivalent productive value, contingent on timely payment. Land will be brought to same level of preparedness as at time of crop survey (see also livelihood section below); or ■ **Cash** – where in kind replacement is not possible, or where owner has access to alternative farm land suitable for the same agricultural purpose compensation in cash at agreed rates for full replacement cost, in proportion to the tenancy or sharecropping agreement should there be any.	■ Persons must prove ownership (not necessarily through title) at the time of final asset surveys; and ■ Persons must prove interest in surveyed alternative land.
Permanent loss of grazing land	Registered owners or claimants of customary held lands	**Cash** – Compensation in cash of the value of the land at full replacement cost.	Persons must prove ownership (not necessarily through title) at the time of final asset surveys.
Permanent loss of natural resources and access to natural resources.	Resource Users	The Project must try to find resettlement sites (if applicable) that maintain access to natural resources. If these resources cannot be replaced communities will receive additional livelihood improvement or alternative livelihood support.	Persons identified through final census.
Permanent loss of fallow land	Registered owners or claimants of customary held lands	■ **In-kind** – Provision of support package to identify suitable fallow land; or ■ **Cash –** Compensation in cash of the value.	Persons must prove ownership (not necessarily through title) at the time of final asset surveys.
Loss of improvements to land	Farmers	■ **Cash-** Compensation at full replacement cost based on professional valuation; and ■ Disturbance Allowanceor ■ **In kind** -Improvements to land such as irrigations, ditches will be provided on the replacement land or included in the calculation of cash compensation.	Person must prove interest in land.
Annual Crops	Owners of crops on farm land	1) Where the Project will give sufficient notice (90 days) to farmers to harvest their annual crops no compensation will be paid for annual crops. 2) **Cash** – Where annual crops cannot be harvested due to a reduced notice period, damaged crops will be compensated as mature crops at agreed rates determined annually by the District Land Board. ■ **In kind** – Access to agricultural improvement package consisting of labour and mechanical inputs to bring land to same level of preparedness and inputs for 1 year such as improved seeds, pesticides, training, equipment if replacement agricultural land has been secured; or ■ **Cash** – Once-off land preparation allowance based on agreed rates determined annually by the District Land Board21 or formal market studies; and ■ **In kind** – Participation in livelihood improvement programmes to increase earning capacity.	■ Crops in place (rooted) at cut-off date and identified through final surveys; ■ Compensation according to defined age or size categories; and ■ Crop owners identified through final asset surveys.

Type of loss	Category of Affected Person	Entitlement	Eligibility
Perennial Crops	Owners of crops on farm land	■ **Cash**- compensation at full replacement cost at agreed rates determined annually by the District Land Board or based on full replacement cost determined by formal market studies; and ■ **In kind** – Access to agricultural improvement package consisting of labor and mechanical inputs to bring land to same level of preparedness and inputs for 1 year such as improved seeds, pesticides, training, equipment if replacement agricultural land has been secured; or ■ **Cash** – Once-off land preparation allowance based on agreed rates determined annually by the District Land Board21 or formal market studies; and ■ **In kind** – Participation in livelihood improvement programmes to increase earning capacity.	■ Crops in place (rooted) at cut-off date and identified through final surveys; ■ Compensation according to defined age or size categories; and ■ Crop owners identified through final asset surveys.
Fruit and economic trees	Owners of trees on farm land	■ **Cash** compensation at full replacement cost, including the cost of forfeited economic benefits, for all agreed fruit and economic trees, shrubs (e.g. coffee) and plants (e.g. cassava) at agreed rates determined annually by the District Land Board or based on full replacement cost determined by formal market studies; and ■ **In kind –** Where cash compensation is not preferred for fruit and economic trees, two (2) replacement saplings for every damaged tree of a crop variety suitable for the identified replacement farm land. No replacement fruit and economic tree saplings will be planted within infrastructure corridor with land-use restrictions.	■ Trees in place (at cut-off date and identified through final surveys. ■ Compensation according to defined age or size categories. ■ Tree owners identified through final asset surveys
Restricted access to landing areas and associated facilities	Fisher folk	■ **In kind** – Address access restrictions through consolidated and improved alternative landing areas and associated facilities; and ■ Participation in livelihood improvement programmes to increase earning capacity.	Organized fisher folk identified during baseline surveys.
Temporary loss of land or assets	Registered owners or claimants of lands or assets	■ Rental amount equivalent to value of income lost access to land or assets for duration of the impact; and ■ Full restoration of land and assets by developer prior to the land and associated assets being returned.	Persons must prove ownership (not necessarily through title) at the time of final asset surveys.
Loss of Accommodation	Tenants occupying affected dwellings	■ Where vacation is immediate (less than 3 months' notice period), tenants with proof of rental agreement with the landlord shall be compensated for the disturbance and loss of shelter in form of a rental allowance package calculated per occupied room. The project will assist in identifying rental options and securing rental agreements; ■ Where the tenant can relocate into a replacement dwelling, the compensation shall be calculated for the transition period for the construction of the replacement structure (up to a maximum of 6 months). The project will assist in identifying rental options and securing rental agreements; and ■ Where the tenant is unable to relocate into the replacement dwelling and continue their tenancy with existing landlord, the compensation shall be calculated for 3 months with transportation and moving assistance.	Tenants with proof of rental agreement with landlord, identified through final census
Vulnerable Support Programme	Vulnerable individuals and families who may find it difficult to cope with the transition e.g. disabled and elderly persons	**In kind** – Transitional hardship assistance program appropriate to specific cases and based on Project assessment, including: ■ Priority in physical mobilization and transfer to resettlement plot; ■ Special assisted transit to resettlement plot; ■ Additional moving, loading and unloading assistance, if necessary; ■ Assistance from support case workers during transit process; and ■ Other specific support related to moving process (e.g. medical assistance) identified by support case workers.	Identified through final census survey based on agreed vulnerability criteria relevant to Project.
Loss of burial grounds and relocation of graves	Households	**In kind** – Complete relocation of graves (exhumation, transportation and reburial) in designated cemetery at agreed rates per grave (in accordance with national legislation): ■ Provision in kind (or cash equivalent) of agreed customary ceremonial assistance per family.	■ Familial graves identified during asset surveys; ■ Unmarked graves identified through chance-find do not qualify for ceremonial assistance; and ■ Chance-find procedures to be adhered to.

6.16.2 Biological Raw Materials Ecosystem Services

Table 6-35: Biological Raw Materials – construction material for traditional houses.

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Project induced in-migration	Increased harvesting of natural resources	Controlled accommodation minimising use of biological raw material	The construction camp must have accommodation facilities for workers to avoid use of traditional houses. The construction camp must not use non-sustainable sources of biological raw material. Support scientific studies and monitoring programs aimed at assessing the sustainability of using local resources for home construction. Avoid aggregate extraction in areas of natural habitat or close to sites of cultural heritage importance; target aggregate extraction in degraded areas with approval from relevant stakeholders. Develop a procurement strategy that encourages use of locally-source aggregates with mechanisms for assessing and maintaining the sustainability of the supply. The volume of material needed must be minimised by specifying the amount of materials needed for specific tasks and through inventory control to avoid surplus (e.g. use of "just in time" delivery). Providing transportation for workers within a 40km radius to avoid local workers getting accommodation from the dwellings close to the project site and as well ensure stability of their families	CNOOC	■ Appropriate accommodation facilities; ■ No traditional houses used for accommodation; and ■ Use of sustainable building materials. ■ CNOOC supported studies and monitoring (documented) by suitably qualified professionals. ■ Documented avoidance of natural habitat and sites of cultural heritage; ■ Documented preference given to degraded areas for aggregate extraction; and ■ Documented approval from relevant parties. ■ Documented sourcing of aggregate from sustainable sources; and ■ Appropriate procurement strategy.	Annually	General Administration and Liaison Waste management Plan

6.16.3 Biomass Fuel Ecosystem Services

Table 6-36: Biomass Fuel – fire wood and charcoal

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project induced –in migration	Increased pressure on wood for fire	Reduce local dependence on firewood and charcoal Sustainable local resource supply	Supply of cheap alternatives (e.g. gas) to local markets by CNOOC to be investigated. If feasible, CNOOC must facilitate the supply of the alternative fuels in line with the requirements of General Administration and Liaison. Support scientific studies and monitoring programs aimed at assessing the sustainability of using commercially-planted forms of biomass fuel, such as Jatropha. Enforcement of a complete ban on harvesting of fire wood by all project personnel.	CNOOC	■ Documented investigations into the feasibility of supplying alternative fuels to firewood and charcoal to local markets. ■ CNOOC supported studies and monitoring (documented) by suitably qualified professionals. ■ No harvesting of fire wood by any project personnel.	Annually	Procurement of Local Goods and Services ■ Procurement of Local Goods and Services; and ■ Community, Stakeholder and Government engagement.

6.16.4 Fresh Water Ecosystem Services

Table 6-37: Fresh Water

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project activities near water resources	Potential for Fresh Water (Type I)[17] Fresh Water (Type II)[18] contamination	Appropriate water pollution control measures. Non-exceedance of lake Albert's carrying capacity[19] Appropriate waste management Collaborative catchment management	The Project footprint may impact the supply of Freshwater for beneficiaries, particularly near areas where the infrastructure will intercept drainage lines, streams, rivers and/or swamps. CNOOC must: ■ Reduce water volumes needed by Project activities through treatment and re-use of process water and waste water; and ■ Implement appropriate water pollution control measures such as oil interceptors, treatment of sewerage and hydrotest discharge. Assessment of the natural capacity of Lake Albert to provide waste assimilation services, and insurance through monitoring and analysis that these are not exceeded. The development of an Influx Management Plan will identify appropriate measures to mitigate the expected increased waste-loading to surface water systems resulting from in-migration (due to the presence of the Project). Degradation of ecosystem services that maintain the Project's social license to operate must be avoided by: ■ Reduce water volumes needed by Project activities through treatment and re-use of process water and waste water; and ■ Contributing to water catchment management in association with other Projects in neighbouring exploration blocks to promote equitable sharing of fresh water resources of Lake Albert.	CNOOC	Documented compliance with the Water Management Plan. Documented monitoring of lake water quality once assimilation capacity has been calculated. Documented compliance with Influx Management Plan Documented collaboration with neighbouring companies extracting water from Lake Albert.	Annually	As indicated in the Water Management Plan Cumulative Impact Assessment Cumulative Impact Assessment

[17] Services that potentially affect beneficiaries' livelihoods, health, safety or culture

[18] Services that potentially affect the project and ability to achieve operational performance (i.e., impact the Project) (Type II).

[19] Carrying capacity is defined as the number of people, animals, or crops which lake Albert can support without environmental degradation of the Lake occurring.

6.16.5 Air Quality Regulation Ecosystem Services

Table 6-38: Air Quality Regulation

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Project works in sensitive ecosystem	Loss of Vegetation Lowering of air quality	Minimise loss of vegetation and wetland ecosystems Enhance vegetation that improves air quality Promote infrastructure that enhances air quality Minimise pollution through education	Loss of vegetation and wetland ecosystems and associated indirect effects are addressed in the Biodiversity Management Plan and the Water Management Plan If feasible, an appropriately sized portion of the land within the project footprint should be dedicated for native forest, and/ or CNOOC should invest (if feasible) in replacing or protecting CO_2 sequestration/ storage services in the immediate area, as part of Corporate Social Responsibility initiatives. Assess the relative importance of natural air quality regulatory services within the Project Area of Influence, and design infrastructure to accommodate and enhance such services where feasible. Implementation of community education programmes on pollution prevention and monitoring schemes. Promotion of CNOOC corporate social responsibility initiatives.	CNOOC	Documented compliance with Water Management Plan. ■ Documented feasibility investigation; ■ Allocation of project land for growing native forest; ■ Appropriate investment into replacing or protecting CO_2 sequestration/ storage services in the immediate area; and ■ Documented Corporate Social Responsibility initiatives that enhance local air quality. ■ Documented assessment of natural air quality services; ■ Infrastructure design that enhances local air quality; and ■ Documented Corporate Social Responsibility initiatives that enhance local air quality. ■ Documented pollution education programmes. Community awareness of pollution prevention and monitoring; and ■ Documented Corporate Social Responsibility initiatives that enhance local air quality.	Annually	Water Management Plan Community, Stakeholder and Government engagement

6.16.6 Water Ecosystem Services

Table 6-39: Water Ecosystem Services: flow, timing, purification, and waste treatment

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Construction of access roads, working along Stream Banks, Wetland crossing, Buffer areas Use of fill material to provide footing for construction Working in wetlands	Disturbance to sensitive riparian habitat Potential contamination from hazardous material storage Impacts on flow connectivity from use of fill material to provide footing for construction Erosion impacts on wetlands from construction activities	Maintain natural flood barriers Maintain natural water flow Maintain the size of wetlands Maintain carrying capacity of Lake Albert Appropriate management of waste Appropriate influx management plan	Avoid or enhance natural flood barriers (e.g. wetlands) before investing in man-made replacements. ■ If necessary, appropriately engineered design features (approved by a suitably qualified professional per site) must be installed to ensure that water flows (e.g. flow volume and direction) in impacted wetland systems are maintained; and ■ Management actions outlined in Biodiversity Management Plan and the Water Management Plan must be implemented. Wetland area directly lost to the Project footprint must be minimised to avoid reducing water purification and waste treatment ecosystem services. Monitoring and analysis of the natural capacity[20] of Lake Albert and Project-affected wetlands to quantify water filtration and waste assimilation services. Appropriate sewerage facilities and wastewater treatment systems to be put in place at construction camp and at long-term operational Project facilities The Influx Management Plan must identify appropriate measures to mitigate the expected increased waste-loading to surface water systems resulting from in-migration of people.	CNOOC	Compliance with Surface Water and Biodiversity Management plans. ■ Documented investigation by suitably qualified professional per site; ■ Photographic evidence showing maintenance of natural water flows; and ■ Documented compliance with the Biodiversity and Water Management Plan. ■ Documented investigation by suitably qualified professional per site; ■ Documented compliance with the Biodiversity and Water Management Plan; and ■ No complaints received through grievance procedure. ■ Documented investigation by suitably qualified professionals; and ■ No complaints received through grievance procedure. Documented compliance with Water and Waste Management Plan. Documented compliance with Influx Management Plan.	Annually	■ Water Management Plan ■ Biodiversity Management Plan; and ■ Water Management Plan; and ■ Waste management Plan. ■ Influx Management Plan

[20] Carrying capacity is defined as the number of people, animals, or crops which lake Albert can support without environmental degradation of the Lake occurring.

6.16.7 Cultural Heritage Ecosystem Services

Table 6-40: Cultural Heritage Ecosystem Services

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Land clearing and excavations along the pipeline corridor Collection of cultural heritage remains	Destruction of surface heritage and buried materials at known cultural heritage sites near the construction works	Informed communities Restrict access to project personnel Maintain access to communities Sensitisation of employees to local culture and heritage	Comply with Cultural Heritage Plan and IFC Performance Standard (PS) 8 (Cultural Heritage) by identifying and avoiding critical cultural heritage that is essential to the cultural, ceremonial, and spiritual aspects of beneficiaries' lives. Where significant project impacts on critical cultural heritage are unavoidable, CNOOC must obtain the free, prior and informed consent (FPIC) of the Affected Communities, as per IFC PS8 and PS1 requirements. Regular platforms for community liaison must be outlined in the Cultural Heritage Management Plan. Protection of the environmental setting for sacred sites close to project activities by ensuring: ■ No personnel and/or contractors allowed beyond footprint of Project; ■ Designated no-go areas, e.g., sacred sites, ritual sites; and ■ Screening planting around Project facilities to protect views. Community access to sacred sites must be maintained. Cultural sensitivity training must be provided to Project staff and incorporated into relevant site induction processes to ensure appropriate respect (sensitivity) for local intangible cultural heritage, traditions, and taboos. Incorporate the CFP into project activities	CNOOC	■ Documented compliance with Cultural Heritage Plan and IFC PS 8 (Cultural Heritage); and ■ Documented Informed Consultation and Participation of the affected communities. ■ Documented compliance with Cultural Heritage Plan and IFC PS 1 and 8 (Cultural Heritage); and ■ Documented Informed Consultation and Participation of the affected communities. Documented compliance with Cultural Heritage Plan and IFC Performance Standard (PS) 8 (Cultural Heritage).	Annually	■ Cultural Heritage P and ■ Historical Monuments (1968, Cap.

6.17 Visual assessment management plan

The visual management plan for the construction of the Feeder Pipeline is presented in Table 6-41.

Table 6-41: Visual management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Opening up areas for pipeline installation and use of lights at project sites	Project light interference on fauna	Minimise artificial light	■ High-level, high-intensity lighting must be avoided unless there is a strong safety case and motion sensor control should be considered to reduce anthropogenic light to a minimum; ■ Artificial lighting must be positioned so that the extent of light emissions beyond the site boundary is minimised e.g. direct lighting downwards and inwards towards site and avoid up-lighting of structures; and ■ Community awareness of lighting requirements should be carried out.	Operation Contractor ESO/ CLO	■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve complaints.	Annually	
	Project activities at work sites	Unsightly conditions due to littering	No litter on site	A high standard of general housekeeping and management of the construction site should be maintained. The visually intrusive and unsightly effects of the construction process must be reversed by rehabilitating the closed-up sections of the pipeline trench and access roads after backfilling pipeline corridor. Specific rehabilitation activities must be site-specific, however the typical sequence of rehabilitation activities in this regard is illustrated Figure 2 and Figure 3. The process is graphically represented in Figure 4 (A-C), whereby the initial backfilled pipeline corridor along the steep embankment is protected against erosion with mulch and sediment netting (A) and subsequently soil binding polymers (B). The Corridor is re-vegetated with grasses and stabilised with erosion-prevention structures (C).	Contractor	■ Appropriate screens in place; ■ Visible succession of plant species (i.e. grass, shrubs, and then trees); ■ Minimal erosion; ■ Timely backfill of exposed trench; and ■ Sustainable rehabilitation. ■ Clean and well managed site.	Monthly monitoring	Biodiversity Management Plan

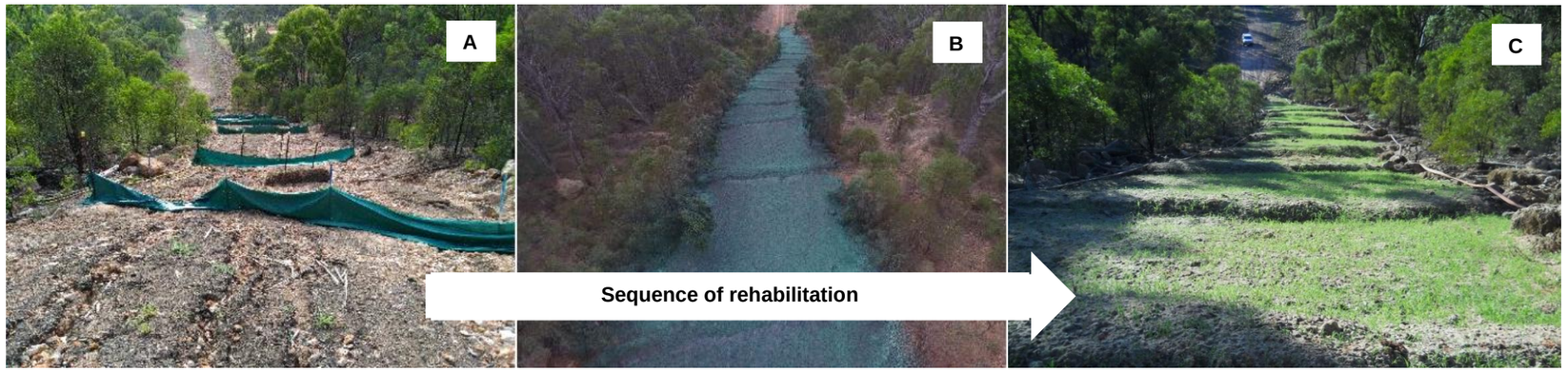

Figure 4: Rehabilitation of a backfilled pipeline corridor (Beneterra, 2017. [Online] Available: https://www.beneterra.com/beneterra-completes-difficult-pipeline-corridor-rehab/).

6.18 Soil management plan

The soil management plan for the construction of the Feeder Pipeline is presented in Table 6-42 and deals with soil erosion and siltation.

Table 6-42: Soil management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
5.18.1	Vehicle maintenance	Contamination from machinery and vehicles	No soil contamination	■ Vehicles and machinery must be subjected to daily inspections for possible leakages and damages that could cause leakage; ■ Vehicles and machinery must be maintained regularly and kept in good working order; ■ Maintenance tasks must be restricted to designated workshops and must not be conducted on site; ■ Spill kits should be on-hand to deal with immediate oil/fuel spills; ■ Vehicles and equipment must be regularly serviced off site; and ■ Vehicles must remain on designated roads to avoid disturbance beyond the construction footprint.	Construction contractor ESO / ECO	■ Appropriate journey management plans; ■ Photographs showing appropriate management actions; ■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve complaints.	Monthly monitoring	
5.18.2	Movement or storage of hazardous material Waste generation	Soil contamination from spills of waste, chemicals or oils	Appropriate treatment of contamination	■ All containment structures must be maintained and regularly monitored; ■ Where hazardous substances are required to be moved, it must be safely contained and transported to minimise the risk of spilling; ■ In the event of a spillage or leakage an emergency response plan and trained personnel must be ready to deal with it; ■ Where seepages and leakages are noted, it must be treated according to an applicable procedure as determined by a plan of action for the specific type of disturbance; ■ A leakage detection/monitoring system should be installed; ■ Adequate waste facilities must be provided and maintained at plant, accommodation and construction facilities; ■ Personnel must be trained to deal appropriately with contamination; ■ Storage of fuel/fluids and chemicals – should only occur in appropriately bunded are where all spills can be contained. Construction Contractor shall be consulted to ensure that appropriate chemicals are stored together to prevent chemicals reacting with one another; ■ Spill contingency measures and spill kits must be available on site; ■ Any spill clean-up is to be appropriately contained and disposed of at the appropriately permitted waste disposal site; and ■ Hazardous chemicals (e.g. Fuel, Lube oil and solvents, used fuel storage containers) must be contained in impenetrable bunds (of 110% capacity of the stored material.	Construction contractor ESO / ECO	■ Records of observations in ESO/ CLO monthly reports; ■ Photographs showing appropriate management actions; and ■ Appropriate journey management plans.	Monthly monitoring	
5.18.3	Movement of heavy goods vehicles over soils in project areas	Soil compaction	Prevent/ reduce soil compaction	■ Remove and place soils when in a dry state and not when moist or wet; ■ Loosening of the soil through ripping prior to the stripping process is recommended in order to break up crusting; ■ Unnecessary trafficking and movement over the areas targeted for construction must be avoided, especially by heavy machinery; ■ Prior to construction the upper usable soil layer should be removed and set aside for use in rehabilitation of the site after site decommissioning. The depth of soil to be recovered is 300 mm, unless indicated otherwise by a registered soil scientist. Soil that is stripped should be stockpiled; ■ Ensure that stockpiles exist for the shortest time; ■ All stockpiles are to be located upstream of active construction sites and away from areas where any form of chemical or potentially polluting material is handled and stored;	Construction contractor ESO / ECO	■ Records of observations in ESO/ CLO monthly reports; ■ Photographs showing appropriate management actions; and ■ Appropriate journey management plans.	Monthly	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring frequency	Additional Reference
				■ All stockpiles are to be protected by bunds to divert stormwater around the stockpiles and prevent loss of soil material; ■ All usable soil stockpiles should not exceed 2 m in vertical height; and Long term stockpiles containing material that will be required for rehabilitation of the site after decommissioning are to be vegetated (grass seed mix).				

6.19 Greenhouse gas management plan

The greenhouse gas (GHG) management plan for the construction of the Feeder Pipeline is presented in able 6-43.

Table 6-43: Greenhouse gas management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
5.19.1 5.19.2 5.19.3 5.19.4	Maintenance of vehicles and machinery Vehicle idling	Air pollution due to release of greenhouse gases	Minimise and control GHG	GHG include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. CNOOC's Greenhouse gas management specification must be complied with and the following must be undertaken where feasible: ■ Enhancement of energy efficiency (see CNOOC's energy management specification); ■ Protection and enhancement of sinks and reservoirs of greenhouse gases (i.e. mechanisms to trap or slow the release of GHG); ■ Minimisation of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy; ■ Promotion of sustainable agriculture and animal husbandry; ■ Use and promotion of renewable forms of energy; and ■ Use of carbon capture and storage technologies[21]. ■ Vehicles and equipment must be designed, maintained, and operated in accordance with Good International Industry Practice (GIIP) and the manufacturer's specifications; and ■ Vehicles and machinery must use low-sulphur fuels or biofuels to minimise SOx emissions. ■ Selected roads will avoid steep gradients and sharp turns which may increase congestion (traffic) and atmospheric emissions; and ■ A journey management plan must be developed to minimise vehicle travel (i.e. trips to and from locations). Halving the number of trips undertaken can halve the GHG emissions from the vehicle. Idling of vehicles must be minimised (i.e. drivers must switch engines off when not in use). ■ Diesel-fuelled mobile equipment should be replaced with electrical equipment, utilizing solar-powered back-up; and ■ Low-sulphur fuels or bio-fuels should be used where the use of electrical equipment is not feasible. Vehicles, equipment, and associated infrastructure must be designed, maintained, and operated in accordance with Good International Industry Practice (GIIP) and the manufacturer's specifications. Vehicles and machinery must use low-sulphur fuels or bio-fuels.	Construction contractor Environmental Coordinator	■ Documented information suitable to assess GHG produced by the project; ■ Up to date GHG Emissions Inventory; ■ Calculation of Industry GHG Emissions; and ■ Appropriate implementation of emissions reduction and offset measures.	Monitoring must be representative of emission discharged by the project over time	
					Construction contractor	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; and ■ Records of observations in ESO/ CLO monthly reports.	Ongoing	
					Construction contractor	■ Appropriate journey management plans; and ■ Records of observations in ESO/ CLO monthly reports.	Ongoing	CUL-QHSE-L3(GE)-023 Land Transportation Specification
					Construction contractor	■ Records of observations in ESO/ CLO monthly reports.	Ongoing	
					Construction contractor	■ Records of observations in ESO/ CLO monthly reports.	Ongoing	
					Construction contractor	■ Personnel using equipment must be properly trained and certified; and ■ The quantity of fuel consumed must be included on a daily report and report to support a calculation of pollutant emissions.	During operation	

[21] Carbon dioxide capture and storage (CCS) comprises separation and isolation of carbon dioxide from industrial and energy-related sources; transport to a storage location; and long-term isolation from the atmosphere (air).

6.20 Health management plan

The health management plan for the construction of the Feeder Pipeline.

Table 6-44: Project induced influx and unplanned settlements/ 'urbanization'

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Project Induced Influx	Risk of increase in spread of diseases	Keep current Controlled settlement growth	Update the Influx Management Plan to include consideration of health determinants and labour recruitment (Table 6-5). Support capacity building for town planning in anticipation of Project induced influx and growth in existing settlements. This should be part of a broader district plan to avoid local make-shift settlements and allow established villages to develop through a clear plan. Support to the local social infrastructure in health centres through improvement and provision of more accommodation units, medical equipment, etc. to mitigate the pressure exerted by the influx	CNOOC Contractor	■ Up-to-date Influx Management Plan with health determinants and labour recruitment compliance with Table 6-5. ■ Documented support of government with regard to town planning.	IMP prior to commencement of operations; Compliance all times	■ Influx Management Plan; and ■ Labour, working condition, and employment management plan.
	Project Induced Influx	Risk of increase in spread of diseases	Promotion and protection of health	■ Develop communicable disease strategies to include tuberculosis, HIV, STI and malaria programmes, with the objective of promoting/ protecting workplace and community health; ■ Develop communicable disease strategies and site-based plans to include tuberculosis, influenza and meningitis, with the objective of promoting/protecting workplace health; ■ Develop a vaccine preventable disease programme for all employees and visitors based on risk for travellers and at-risk occupations. All employees and contractors residing in close contact in camps should receive vaccines for communicable diseases where these are appropriate, including for the quadrivalent meningococcal meningitis vaccine; ■ Screen local employees/contractors for TB at recruitment and provide adequate care and treatment programs from the Project's workplace medical service while complying with the requirements of the national TB program; ■ Develop an integrated workplace malaria and vector control programme to include source reduction and environmental management of breeding sites, that all accommodation units in the permanent camp are proofed against mosquitoes, routine inspections of accommodation units, appropriate IEC programmes for the workforce and contractors prior to secondment and for use in country, policies and programmes related to use of protective clothing and the use of malaria chemoprophylaxis and surveillance programmes between the workplace medical service and vector control team to determine the likely origin of, and root cause of malaria cases; ■ Reduce potential human vector contact and control of breeding sites of disease vectors such as mosquitoes. Continually monitor activities on site to ensure adequate drainage and management of storm water to minimise breeding in the area; ■ Develop a clear HIV policy and programme in the workplace which includes ensuring that there is adequate accommodation capacity at the temporary personnel camps to eliminate the need for contractors or visitors to seek accommodation in the local villages; ■ Develop and implement an HIV and STI prevention programme for suppliers, which is to include awareness and education about STI's. The design and placement of rest stops for drivers transporting goods	CNOOC Contractor	Documented implementation of strategies to deal with communicable diseases.	Annually	

				and materials to and from the production facility should be away from local communities and properly subsidised for cheap food / entertainment to avoid the potential for prostitution and to eliminate the need for drivers to seek accommodation in the local villages; ■ Develop a code of conduct that actively discourages sexual relationships between the workforce and the local community; ■ Incorporate effective and adequate Health and Safety measures, including the provision of adequate and sufficient PPC/E of nationally or internationally recognised standards to all workers, clear signage about safety and precautionary warnings around and within construction and high risk areas, protection against biological hazards, including insect and snake bites and provide mobile toilets in different work areas (where formal toilets are not available) to prevent uncontrolled defecation/urination and faecal contamination among members of the workforce; ■ Work with the village and traditional leaders to manage truck stops, as well as district authorities to report any increase in high-risk sexual behaviour from elements of the workforce, including the collection of baseline data; ■ Develop and implement an HIV and STI management programme in the workforce, to include awareness and education, treatment services that link to the public health service, provision of free condoms, access to counselling, proper provisioning of the work camps to dissuade workers travelling into communities for entertainment and support of family friendly accommodation in the camps; ■ Prohibit all drivers (permanent employees, contractors and suppliers) from giving lifts to the local community; ■ Screen for STIs and hepatitis B/C virus as part of pre-employment fitness to work process. Treatable causes should be managed, and chronic carriers excluded from employment until managed; and ■ Support a HBV vaccination campaign/ or antibody testing on any employee who may have not been vaccinated as a child.				
	Project Induced Influx	Risk of increase in spread of diseases	Assess outbreak risk Effective camp facility management Adequate accommodation and facilities Minimise communicable disease risks	Undertake an outbreak control risk assessment and planning for communicable diseases such as influenza and meningitis. Ensure effective camp facilities management. For example, the location of camps must be away from communities to prevent exposure to disease risks (such as malaria) and to exclude the workforce from interacting with the community. Accommodation and facilities management should be well designed and planned in employee and contractor camps to prevent overcrowding. ■ Develop information, education and communication (IEC) programmes in the community to increase awareness and reduce communicable disease risks. Ideally, support the development of village health teams (VHTs) in the study area to deliver these (in partnership with the health department or non-governmental organisation); ■ Develop effective management of emergencies, illness and injuries through adequate medical provision, equipped first aid points at the workplace and as needed in the field and the availability of emergency response facilities; and ■ Create awareness of all Occupational Health and Safety requirements from and measures for workers that include adequate orientation as well as ongoing/routine training and sensitisation on OHS.	CNOOC Contractor	Documented outbreak control risk assessment and planning for communicable disease. ■ No registered grievances; and ■ Appropriate barriers preventing workforce from interacting with local communities. No complaints about overcrowding. Recorded results of programmes.	Annually	

	Project induced influx	Spread of animal diseases	Promote veterinary health Minimise burden on established local medical services	Support selected veterinary health programmes in the KFDA, including vaccination of domestic animals for rabies and cattle for brucellosis. Support rodent control in settlements likely to receive the bulk of influx and ensure effective camp management to prevent attraction of rodents. Develop and design appropriate site based medical services that can cater for all workplace health needs so that local health services are not overburdened with medical cases from the workforce. Avoid the recruitment of local medical staff to work on Project medical services and work with the government to support ways to attract medical staff to work in the public health facilities in the study area.	CNOOC Contractor	Recorded results of programmes Records of medical services provided ■ Personnel records show no medical professionals directly employed by CNOOC; and ■ Records of medical services provided.	Annually	
	Project induced influx	Increased pressure on health facilities	Enable a clear integrated district health strategy Meet anticipated demand	■ Evaluate opportunities for health systems strengthening (HHS) and support the development and implementation of a clear integrated district health strategy, which can plan for influx and requirements to upgrade health services in alignment with government structures, but ideally focused at the entire district and especially the oil development nodes. ■ CNOOC should have a partnership role to play in their study area, but solely in supporting the government to fulfil its mandate of providing public health services and not assuming this role. All HSS should be performed after a formal memorandum of understanding is concluded that defines each party's role and responsibilities and deliver timeframes. These agreements must be based on sound sustainability principles. ■ Develop nutritional programmes that promote proper nutritional practices at the workplace to prevent obesity and related health impacts, including education programmes in the workforce on financial management and support of the household units in employees that have traditionally followed a subsistence lifestyle. ■ As an element of town planning, support local authorities in the provision of basic services to cater for the anticipated demand, especially environmental health including water, sanitation, and hygiene programmes. ■ Ensure adequacy of welfare and amenities, including the supply of adequate drinking water as per WHO recommended 5 litres per day, cloak rooms, sanitary facilities separate for men and women, adequately furnished eating places, hand wash rooms/areas and proper meals.	CNOOC Contractor	■ Signed memorandum of understanding; and ■ Personnel records show no medical professionals directly employed by CNOOC.	Prior to commencement of construction phase	
	Project induced influx	Pressure on fishing and agriculture	Enable sustainable fishing and agriculture practices	Support sustainable fishing practices through education, assisting with enforcement of fishing laws and economic interventions to manage demand so that overfishing is managed. Fish cage farming on the lake may reduce the pressure on the fisheries lake resources. In a similar way, support agriculture (such as conservation farming) to increase yields on land that will reduce in availability.	CNOOC Contractor	Records of support for fishing laws and conservation farming.	Annually	
	Project pay-outs to communities and workers	Disruption of family livelihoods	Minimise debt	Information, Education and Communication (IEC) campaigns, financial literacy and business development programs to educate the local workforce (and contractors) on financial management.	CNOOC Contractor	Records of campaigns.	Ongoing	

	Porject induced influx	Increased pressure on health facilities	Empowerment and equality	Support to Potentially Affected Communities (PACs) and vulnerable groups on gender empowerment, local development programmes, and health issues. Issues must be addressed through contractor management and practices. Develop inflation management and monitoring programs. Support vulnerable groups. Evaluate opportunities to maintain local cultures and norms and build an equitable society, taking note of especially vulnerable groups.	CNOOC Contractor	Records of such support.	Annually	
	Employment on the project	Graft and Exploitation	CNOOC to be alert to the potential for graft and exploitation that foreign (non-Ugandan) employees	■ Ensure that CNOOC puts in place and meticulously implements all required anti-corruption, business ethics related and internal compliance Policies and Programmes, including the CNOOC Limited Code of Commercial Behaviour and Conduct of Employees, the Procedures for Handling Violation of Rules of CNOOC Limited Employees as well as its Guidelines for Overseas Operation with Compliance of CNOOC; ■ Ensure that all employees, contractors and sub-contractors are alert to situations where they may become the victims of crime or targets for corrupt practices, including that perpetrated by civil servants; ■ Develop and implement a campaign at national, district and local level to ensure that there is a comprehensive understanding of the manner in which CNOOC appoints staff, as well as associated sensitisation related to graft and exploitation; ■ Ensure that all employees, contractors and sub-contractors are alert to situations where they may become the victims of crime or targets for corrupt practices, including that perpetrated by government officials; and ■ Ensure that there is a protocol in place for reporting and managing incidences of intimidation and/or corruption. This protocol should include a coherent process for supporting persons who are unable to communicate fluently in English.	CNOOC	■ Anti-corruption policies; and ■ Employees all have the required work permits.	Pre-construction and ongoing	

6.20.1 Influence of Workforce

Table 6-45: Influence of Workforce

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
	Workforce health at construction sites	Work related health, risks at worksites	Minimise influence of Workforce health on local population.	The incoming workforce has the potential to exacerbate the communicable disease burden associated with poor socio-economic and living conditions, especially those transmitted by close contact. The following must be undertaken: ■ Develop a workplace TB, HIV, STI and malaria management plan as part of the communicable disease strategy; ■ Evaluate the origin of any incoming contracted construction workforce and screen for TB and associated communicable diseases as part of the Projects fitness to work programme; ■ Support effective vaccine preventable disease programmes; ■ Develop effective design and planning of workplace accommodation to prevent overcrowding. ■ Develop effective workplace medical services; ■ Wellness programmes in workforce to prevent NCDs; and ■ These plans must make provision for contractors or be part of formal contractor management plans.	CNOOC Contractor	Documented management plan and records of its implementation.	Prior to commencement of construction phase, thereafter ongoing	

6.20.2 Sexually transmitted infections (STIs) and HIV/AIDS

Table 6-46: Sexually transmitted infections (STIs) and HIV/AIDS.

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Interaction of project workers with communities	Risk of spread of diseases from workforce to communities	Minimise influence of Workforce health on local population.	There is a risk of increasing STIs in the community from the workforce which must be minimised through the following: ■ Develop specific programmes for high-risk groups including transport workers; ■ Implement health education programmes for employees in order to disseminate information regarding general social pathologies and spread of disease; ■ Ensure that there is sufficient provision for worker recreation in order minimise the lure of substance abuse and use of external sexual services and facilities. While it is understood that it is extremely difficult to ensure prevention, it will be necessary for CNOOC to put very specific measures in place to address such issues. The current CNOOC practice of sequestering workers who reside in the camp to the camp site from 19:00 at night assists in minimising the potential interaction between workers and villagers, including sex workers; ■ Develop a code of conduct that prohibits sexual fraternisation within the workforce, especially women that originate from the local community. Maintain a closed camp status; ■ Screen for STIs as part of fitness to work programme in both the contracted and full time workforce; ■ Support health systems strengthening activities with the local health authorities and other organisations to develop a co-ordinated approach to STI/HIV prevention and management in the broader area; ■ Support IEC programmes on awareness and education, and use VHTs to spread messaging, as well as supporting HIV counselling/testing and referral for care/treatment; ■ HSS in the local health centres to be able to provide effective care and treatment services; and ■ Support women and young girl empowerment programmes. ■ Busing in and out local workers to and from the project sites up to a radius of 40kms	CNOOC Contractor	Documented management plan and records of its implementation.	Prior to commencement of construction phase, thereafter annual moitoring	

6.20.3 Environmental modifications

Table 6-47: Environmental modifications.

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Monitoring Frequency	Additional Reference
	Environmental modifications	Risk of disease, injury, exposure to waste chemicals	Effective environmental management	Environmental health exposures related to the Project will be present in all lifecycle stages of the Project and must be addressed by the management plans provided in the FP C-ESMP. In particular, the Waste Management Plan must be implemented in compliance with IFC PS 3.	CNOOC Contractor	Documented management plan and records of its implementation.	Prior to commencement of construction phase, thereafter ongoing	Waste Management Plan

	Construction activities creating pools of water	Disease incidences in work areas	Minimise habitat for mosquitos	Construction will create a macro- habitat disturbance on the pipeline development corridor and has the potential to increase breeding sites for mosquito proliferation that can increase diseases such as malaria. CNOOC in collaboration with the contractor must develop integrated malaria control programmes that include: ■ Source reduction as a key element of control; ■ Prevention of water pooling; and ■ Effective remediation where required after work has been completed.	CNOOC Contractor	Documented management plan and records of its implementation.	Prior to commencement of construction phase, thereafter ongoing	

6.20.4 Physical and economic resettlement

Table 6-48: Physical and economic resettlement.

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Referenc
	Resettlement	Exposure of resettled community members to disease	Maintain local culture Maintain livelihoods	■ Health inputs should be reviewed when planning the resettlement of communities to ensure that these are addressed effectively. ■ Communication and consultation as part of the resettlement action plan will be required and must include relevant social determinants of health.	CNOOC Contractor	Documented management plan and records of its implementation.	Annual monitoring	Waste Manageme Plan
		Disruption of social network		Develop programmes that maintain positive traditional values and cultural structures in communities.		Documented management plan and records of its implementation.		
		Impact on livelihoods		While marginal, the loss of arable land (with loss of food and cash crops) may impact on the livelihoods of certain sectors of the community, and influence nutrition and cause food insecurity. This must be avoided through the following: ■ Design alignments of roads and the pipeline to minimize loss of arable land; ■ Understand ownership or dependency factors on land, especially in vulnerable groups so they are not impacted by loss of access to land; ■ Support adequate compensation and transitional support packages; and ■ Support the re-development of land after the pipeline has been developed and support initiatives to increase yields, with initiatives such as conservation farming.		Documented management plan and records of its implementation.		

6.21 Responsibilities for Managing Cumulative Impacts

The management of cumulative impacts associated with oil industry development in Western Uganda will require the involvement of Government, the oil industry and individual developers. Each party bears different responsibilities in this process. For clarity, key identified cumulative impacts are tabulated below and the broad responsibilities of Government, the oil industry as a collective and CNOOC as an individual developer are described in relation to each identified impact in Table 6-49. This table should be used as a guide in interpreting the responsibilities described in the management plans above should there be any uncertainty. CNOOC is only responsible for baring their part of collective management responsibility where cumulative impacts are applicable. In many instances, Government of Uganda is responsible for the primary management of the cumulative impact and to ensure that associated planning is in place. To the extent agreed with the oil industry, the oil industry has a role to play. Similarly, individual companies, and CNOOC specifically within the zone of influence of the Kingfisher Field Development Area, is encouraged to play an active supporting role in the mitigation of cumulative impact as they relate to the proposed urbanisation of the Buhuka Flats, threats to critical biodiversity habitat and species and the multiple impacts identified in relation to growing population pressure in the local area.

Table 6-49: Description of the responsibilities of Government, the Oil Industry and CNOOC for management of cumulative impacts

	Cumulative impact or identified risk	Government Responsibilities	Suggested support to be provided by the Oil Industry	The responsibility of CNOOC in such initiatives
Infrastructure	Capacity of key regional roads to accommodate oil industry traffic volumes	The Government of Uganda is upgrading the P1 road between the Buhuka Flats and Hoima (P1). The ESIA recommends that this road be tarred to limit dust through villages.	Oil industry alignment on regional biodiversity planning and support of regional biodiversity initiatives	CNOOC to engage with Government and pursue a decision on the tarring of the road. Should Government not intend to proceed with tarring of the road, CNOOC to take responsibility for control of dust along this road during the construction period. The air quality management plan should then be amended to include responsibility for control of dust on the P1 during the construction period, paying particular attention to application of dust suppressants on roads passing through villages.
	The proposed upgrade of R5 Northern Road through Bugoma Forest as an oil road	Government proposal to upgrade R5: recommendation that Government reconsider this decision in light of biodiversity sensitivity of ecosystem, particularly in support of Eastern chimpanzee	Oil industry alignment on regional biodiversity planning and support of regional biodiversity initiatives	CNOOC to indicate clearly to government that this particular road is not required for their proposed operation during either construction or operational period (letter has already been sent to Government). CNOOC to engage with government to encourage a decision not to upgrade this road.
Emergency response capability	Limited emergency response capability within the region	It is Government's responsibility to provide urbanised areas with emergency response services	The oil industry is encouraged to engage with government in the development of an emergency response plan, training program and support for the development of appropriate resources in the local area to respond to pollution and civil emergencies such as residential/urban fires	CNOOC to actively engage with physical development plan and local government to ensure that proposed urbanisation that will result from physical development plan is supported by appropriate emergency's response capability within the local area. The extent of such support to be determined in discussion with government.
Urbanisation	Increased urbanisation due to in migration with associated reduced reliance on traditional lifestyles	It is government's responsibility to pursue and implement the development of villages, towns and associated support infrastructure	Oil industry encouraged to support the development of town planning capacity, to actively participate with government in regional planning to ensure that future urban plans do not impact negatively upon the requirements of the oil industry (encroachment into buffer areas) or result in undue environmental deterioration through unstructured planning and settlement	CNOOC to actively engage with government in relation to the proposed Buhuka flats physical development plan and specifically as it relates the requirements to revise the plan to ensure that the Kingfisher Field development area environmental impacts, as currently assessed, are appropriately considered by government in finalisation of the physical development plan.
Biodiversity	Threat to regionally important biodiversity	It is the responsibility of Government to manage biodiversity resources within the regional area. Specifically, to ensure that there is adequate enforcement and protection provided to such resources and that appropriate plans are in place to monitor change on biodiversity protected areas and biodiversity critical habitats	Industry encouraged to establish a forum to identify areas of importance within areas of project cumulative influence and pursue regional biodiversity plans and support the implementation of such plans. Specifically, a focus on research, long-term management of population health & reproduction and detection of change within both habitat and species	CNOOC to participate actively in the establishment and running of an industry collective aimed at regional biodiversity management and bear their share of costs in support of regional biodiversity initiatives. Specifically, to ensure that regional biodiversity plans cater for the following species of concern: - Grey crowned crane - Eastern Chimpanzee - Nahan's francolin
	Increased pressure on natural resource use	It is the responsibility of government to manage population distribution within the region, access to and limitation on the harvest of natural resources and management and stewardship of forest resources	Industry support for regional biodiversity planning and support for identification and development of appropriate programs to reduce the reliance on traditional materials for construction and biomass burning for purposes of cooking.	CNOOC to actively participate in regional biodiversity planning and bear their share of cost associated with such efforts

	Cumulative impact or identified risk	Government Responsibilities	Suggested support to be provided by the Oil Industry	The responsibility of CNOOC in such initiatives
	Threat to Lake fish stocks due to over exploitation	It is the responsibility of government to appropriately regulate and control the fishing industry. This includes commercial and subsistence fishing.	Lake fish stocks are not limited to the Kingfisher field development area only where enhanced road access has exacerbated the over-exploitation of fish stock. The oil industry is encouraged to engage with government to support the development of a Lake Albert fisheries plan, support Government in the implementation of the plan and support the development of an appropriate long-term monitoring program to detect change in key indicator species. The oil industry is also encouraged to consider initiatives to introduce local species aqua-culture to provide additional protein into the local community to alleviate pressure on wild stock; also, to consider the development of aquaculture for purposes of restocking depleted lake populations	CNOOC to actively participate in support of oil industry initiative to support government to manage fish stock and threat on fishing industries. CNOOC to bear their portion of cost in this regard.
Food security	In-migration posing a risk to food security	Ugandan local Government Sub-county administration are in process of pursuing strategies aimed at improving agricultural production. The intent is to both solve regional farming problems affecting production such as crop failures due to disease and drought. Interventions may include introduction of modern farming methods, training of farmers in post-harvest techniques, development of accessible market access mechanisms, and sensitising farmers about land degradation.	Provide support to this regional agricultural program particularly centred around the oil development node at Kabaale. Increasing sustainable food production, and improving agricultural capacity and access to markets, will in the long term reduce pressure to convert new areas of natural land to agricultural use and decrease reliance on forest harvested products.	CNOOC to participate actively in the regional agricultural program and co-ordinate the involvement of the oil industry in support of this initiative
In migration: Veterinary	In migration will introduce additional pressure on local government resources to provide Veterinary control with associated risk of a break of Veterinary diseases	It is the responsibility of government to provide a regional Veterinary service to ensure that the risk of outbreak of Veterinary disease is appropriately controlled	The oil industry is encouraged to work with government to develop a regional Veterinary control plan to ensure that in migration associated with the oil industry does not result in outbreak of Veterinary disease, in particular vaccination programs against rabies in domesticated animals and brucellosis in cattle	CNOOC to actively support industry initiatives to develop joint Veterinary control plans with in the region and specifically to support the Government in local Veterinary control plans and vaccination programs targeting the KFDA
In migration: human health	In migration is likely to overtax the already limited regional health facilities under strain from a burgeoning population and refugee influx into the Western Ugandan area.	It is the responsibility of government to provide a regional health service and appropriate preventative medical programs	The oil industry is encouraged to support government in the planning and development of appropriate health control plans for the cumulative regional areas. Specifically, health emergency response plans in the event of communicable disease outbreak (haemorrhagic fevers in particular) and waterborne vector control (malaria and similar)	CNOOC to support local health programs and participate actively in oil industry regional initiatives in support of government health program and preventative medicine programs and emergency response to health incidence

7.0 PERFORMANCE ASSESSMENT, CORRECTIVE ACTION, MANAGEMENT REVIEW AND AUDITING

The assessment of performance and provision for corrective actions has the following aims:

- Confirmation of compliance with the requirements as set out in the FP C-ESMP, i.e. Construction contractor performance measured against the FP C-ESMP;
- Measurement of environmental and social performance (degree of success of the FP C-ESMP specifications in managing social and environmental impacts); and
- Ensuring that any deficiencies in the Contractor's performance or the FP C-ESMP itself are identified and remedied.

Aims will be met by responsible parties outlined in section 5.0 and entail:

- Ongoing monitoring / inspections undertaken by full time site staff (the ESO(s) and CLO(s) as part of CNOOC's team);
- Senior staff review (CNOOC Environmental Coordinator); as well review by independent consultants (where considered necessary by the Contractor or CNOOC Environmental Coordinator);
- Auditing by independent consultants;
- Corrective action by the Construction contractor shall ensure that any identified problem areas identified by CNOOC's team are effectively addressed. Specifications for monitoring, review and auditing are provided in the sections below; and
- CNOOC must establish a database management system to store and track the findings of the various monitoring programmes so that the appropriate modifications to the plans can be made.

7.1 Environmental Monitoring Strategy

A monitoring[22] strategy must be defined to ensure that the effectiveness of mitigation measures can be tracked and corrective action (see Table 7-1) taken as necessary. Monitoring is not only intended to verify the contractor's compliance with the FP C-ESMP but also to assess the effectiveness of environmental management, independently of whether the specifications in the FP C-ESMP have been complied with.

Table 7-1 defines, in broad terms, the monitoring requirements necessary during the construction phase of the Project. Monitoring is undertaken by the MContractor's team, with assistance where necessary, from the CNOOC Environmental Coordinator and from Specialist Consultants. Much of the monitoring in this kind of civil construction contract involves the ESO or CLO being present when potentially significant construction activities are taking place, being observant, and checking that the Construction contractor is not materially deviating from the requirements set out in the FP C-ESMP.

There are some specific metrics that define performance and are based on actual quantitative measurements (dust and noise are examples), but much of the monitoring is simply careful observation to check that the Construction contractor is meeting the obligations set out in the FP C-ESMP. Even in the case of noise and dust, it is not always necessary to measure performance against the quantifiable standards, and this judgement must be made at the time by the ESO and the EC, depending on the circumstances. The performance standards often provide an indirect measure of effectiveness – for example, the monitoring of the Contractor's compliance with local employment requirements and the communication of these requirements widely is an indirect measure of the control of in-migration.

It must be noted that this monitoring strategy must be considered a live strategy and must be updated and amended as required, based on the findings of the various monitoring plans.

[22] *Monitoring is a process of surveillance, based on specified approaches and schedules, used to detect whether any changes have occurred in the predefined, quantifiable properties of the particular environment under consideration.*

Table 7-1: Monitoring requirements.

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility	Additional reference
Community Nuisance (Dust)	To be based on the location of sensitive receptors in relation to construction activities. ESO/CLO to prioritise locations in which monitoring is required	■ Ongoing inspections at operational areas to detect and intervene in cases where high dust volumes are being generated; and ■ Passive sampling when specified by the ESO /CLO in cases where dust impact is in question either due to visible evidence or public complaint.	**Records:** ■ Instructions to contractors to intervene in cases of high dust load generation; and ■ Data from dust fall buckets measuring dust fall must be compared with standards for residential and construction/ industrial/mining areas. **Community Concerns:** ■ Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO. **Quantitative Monitoring:** ■ Dust Fall: 600 mg/m^2 /day (measured over 30 days).	Monthly ESO/CLO progress reports	ESO/CLO	■ Air Quality Management Plan; ■ CUL-QHSE-L3(GE)-069 Environmental Monitoring Specification; ■ CUL-QHSE-L2-016 Monitoring and Measurement Equipment Management Procedure; and ■ CUL-QHSE-L2-017 Monitoring and Measurement Management Procedure.
Air quality	Suitable ambient air quality monitoring network for the construction phase	Ongoing	■ Fine PM_{10} particulate monitoring via active monitoring methodologies; ■ Monitoring of gaseous trace gas pollutants (i.e. SO_2, NO_2, O_3 etc) with passive diffusion tubes should be undertaken biannually (twice a year during construction); ■ Audit and optimise the air quality monitoring network annually audit to ensure that it is maintained in accordance with best practice and is relevant to the key emission sources on the ground; and ■ Quantitative Monitoring: ▪ Suspended Particulates (Ugandan daily standard): ≤200 µg/m^3; ▪ PM_{10} (IFC daily standard): ≤50 µg/m^3; ▪ PM_{10} (IFC annual standard): ≤20 µg/m^3; and ▪ Respirable particulate matter (<10µm) (Ugandan daily standard <100 µg/m^3).	Monthly air quality monitoring reports	ESO/CLO	Air Quality Management Plan
Community Nuisance (Noise)	To be based on the location of sensitive receptors in relation to construction activities. ESO/CLO to prioritise locations in which monitoring is required	■ Daily observation at key locations where noise is being generated near sensitive receptors; and ■ Noise monitoring using an integrating noise meter as specified by the ESO/CLO when there is clear evidence of community nuisance.	**Observation:** ■ ESO to monitor and log noise incidents where noise control is ineffective or only partially effective in sensitive areas. Log to include time of day, period over which incident occurs, and apparent severity (low, medium, high). **Community Concerns:** ■ Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO. **Quantitative Monitoring:** ■ Need to be in compliance with Ugandan Noise standards for construction. In their absence, the World Health Organization guidelines for daytime and night-time noise should be adopted	Monthly ESO/CLO progress reports	ESO/CLO	■ Noise and Vibration Management plan; ■ CUL-QHSE-L3(GE)-056 Noise Management Specification; and CUL-QHSE-L3(GE)-023 Land Transportation Specification; and ■ CUL-QHSE-L3(GE)-069 Environmental Monitoring Specification.
Population influx and social pathologies	Camp sites, work sites	Ongoing watching brief	■ Compliance with LFMP employment requirements; ■ No ad hoc employment at the work sites or camp sites; ■ Adherence to closed camp, alcohol-free camp policy;	■ Construction contractor; ■ Communications Plan; and	CLO/ESO Construction contractor	Influx Management Plan

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility	Additional reference
			■ Evidence of implementation of communicable disease programmes; and ■ Compliments and Complaints Register.	■ ESO/CLO progress reports.		
Communicable Diseases	Non-specific	Ongoing watching brief	■ CNOOC-approved STI Management Plan; ■ Number and nature of initiatives as per the plan; ■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; ■ Record of STI and malaria incidents recorded among Contractor staff; and ■ Record of induction training and tool box talks.	■ STD Management Plan; ■ Malaria Management Plan; ■ ESO/CLO monthly reports; and ■ Malaria / STD incidence reports.	ESO/CLO Construction contractor	Community Health, Safety, and Security Management Plan
Traffic and Pedestrian Safety	Principally areas where households and construction teams interact	Ongoing watching brief	■ Vehicle accident records; ■ Pedestrian accident records; ■ Near misses; ■ Compliance with speed limits; ■ Advanced driver training for Contractor heavy vehicle staff; ■ Community safety references in induction briefings and ongoing toolbox talks; ■ Safety briefings of communities; and ■ Compliments and Complaints Register.	■ Accident / incident reports; and ■ ESO/CLO progress reports.	ESO/CLO Construction contractor	Traffic Management Plan
Water Use Management	Community boreholes within 1 km of project boreholes Water abstraction sites	■ Ongoing	■ Records of groundwater use; ■ License for use of water from the Directorate of Water Resources Management (DWRM); ■ Records of monitoring of impact on community water supply when Project supply closer than 1 km to community borehole; ■ Records of corrective action, where necessary; and ■ Record of authorisation of use of surface water.	■ Record of community borehole monitoring; ■ Groundwater abstraction report; ■ Surface water abstraction report; and ■ ESO monthly report.	Construction contractor ESO	■ Water Management Plan; ■ Water Act (Cap 152); and ■ Uganda Bureau of Standards (US 201) Specification for Drinking (Potable Water; 1994).
Vehicle and Materials Management	Camp sites, work sites	Ongoing watching brief	■ Records of inspection and maintenance of vehicles and equipment; ■ Approved method statement for handling of hazardous materials on site; ■ Compliance with requirements of approved method statement; ■ Inventory of hazardous materials and Contractor's Documentation available at specified locations; ■ Documentation confirming PCB and CFC free equipment; ■ Protection of fuel storage and camp generators as per requirement; ■ Availability of spill / drip clean-up materials at specified locations; ■ Availability of sheeting / drip trays in all key vehicles; ■ Incident and corrective action records; ■ Provision of appropriate PPE to employees;	■ ESO progress reports; ■ Logistics Superintendent progress reports; ■ SHE advisor progress reports; and ■ Camp manager progress reports.	Construction contractor	■ Traffic Management Plan; and ■ Waste Management Plan.

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility	Additional reference
			■ Records of induction training and tool box talks; and ■ Records of bio-remediation.			
Natural Heritage – general and bush clearing	Project footprint and surrounding areas	Ongoing watching brief	■ Induction and toolbox talks, talk about protection of plants and wild animals; ■ Record of training of dozer operators to minimise Project footprint; ■ Record of training vehicle operators to remain within the approved Project footprint; ■ Records of removal of dangerous animal from work sites and camps; ■ Records of communication with IUCN regarding reptile identification; ■ Absence of evidence of hunting or animal harassment; ■ Absence of evidence of unauthorised vehicle access outsider of the approved Project footprint; ■ Records of ESOs accompanying surveyors and dozer operators during bush clearing and salvaging of threatened species or relocation of infrastructure to avoid local areas of high biodiversity; and ■ Footprint compliance with FP C-ESMP buffer zones and access restrictions.	ESO progress reports	ESO	Cultural Heritage Management Plan
Natural Heritage – alien invasive species	Project footprint and surrounds	Ongoing watching brief	■ Records of wash-down of site vehicles and equipment prior to use on site to remove alien weeds; ■ Production of illustrated alien invasive species booklet; ■ Photographic record and GPS locations of alien infestation in Project footprint area; and ■ Records of application of removal strategy.	■ Records of vehicle wash-down; ■ Records of alien plant identification and removal; and ■ ESO monthly report.	ESO	Biodiversity Management Plan
Natural Heritage – rehabilitation management	Project footprint	Ongoing watching brief	■ Record of induction and toolbox talks for dozer operators. ■ Record of training of dozer operators regarding topsoil removal. ■ Absence of contamination of topsoil with other materials ■ Evidence of reinstatement as per rehabilitation requirements of the specification.	■ Photographic record pre-bush clearing; and ■ ESO monthly report.	ECO/ESO	
Cultural Heritage	Project footprint and surrounding area	Ongoing watching brief	■ Records of training of key personnel to identify cultural / archaeological artefacts; ■ Record of communication with communities to verify. location of sacred sites when construction is within 100 m of a known cultural heritage site; ■ Compliments and Complaints Register; and ■ Compliance with Chance Find Procedure and subsequent recommendations by specialist where artefacts are found.	■ Specialist Report (if significant artefacts found); and ■ ESO/CLO monthly report.	ESO/CLO Specialist archaeologist	
Employment	Project Area	Ongoing watching brief	■ Signed Labour Force Management Plan (LFMP); ■ Evidence of maximising labour use in preference to machinery; ■ Compliance with the Community Liaison Forum procedure for selection and vetting of unskilled personnel; ■ Compliance with the LFMP; ■ Records of communication initiatives to improve understanding of Project-affected communities about how to apply for a job;	■ Project Labour Agreement; ■ Records of employment; ■ Grievance Procedure; and	Construction contractor CNOOC Local Procurement Officer	Labour, Working Condition, and Employment Management Plan

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility	Additional reference
			■ Percentage of unskilled workers from Project-affected communities; ■ Evidence of vetting semi-skilled and skilled workers according to the 'spiral' principle; ■ Percentage of women, disabled or otherwise disadvantaged people employed; ■ Provision and briefing of personnel about the grievance procedure; ■ Workers understanding and use of the Grievance Procedure; and ■ Frequency of complaints in the Compliments and Complaints Register rand the Grievance Procedure.	■ Social Performance Manager monthly report.		
Local Procurement	Project Area	Ongoing watching brief	■ Implementation of CNOOC procurement of local Goods and services*;* ■ Local procurement records in compliance with approved Local Content Plan, developed in accordance with the CNOOC procedure; and ■ Local content spend in relation to total spend.	■ Construction contractor Local Content Plan; and ■ Social Performance Manager monthly report.	Construction contractor CNOOC Local Procurement Officer	Procurement of Local Goods and Services Management Plan

In addition to the above the following must be implemented:

Groundwater monitoring

The following locations closest to the construction of the feeder pipeline must be **sampled and monitored** during the construction of that particular section of the pipeline:

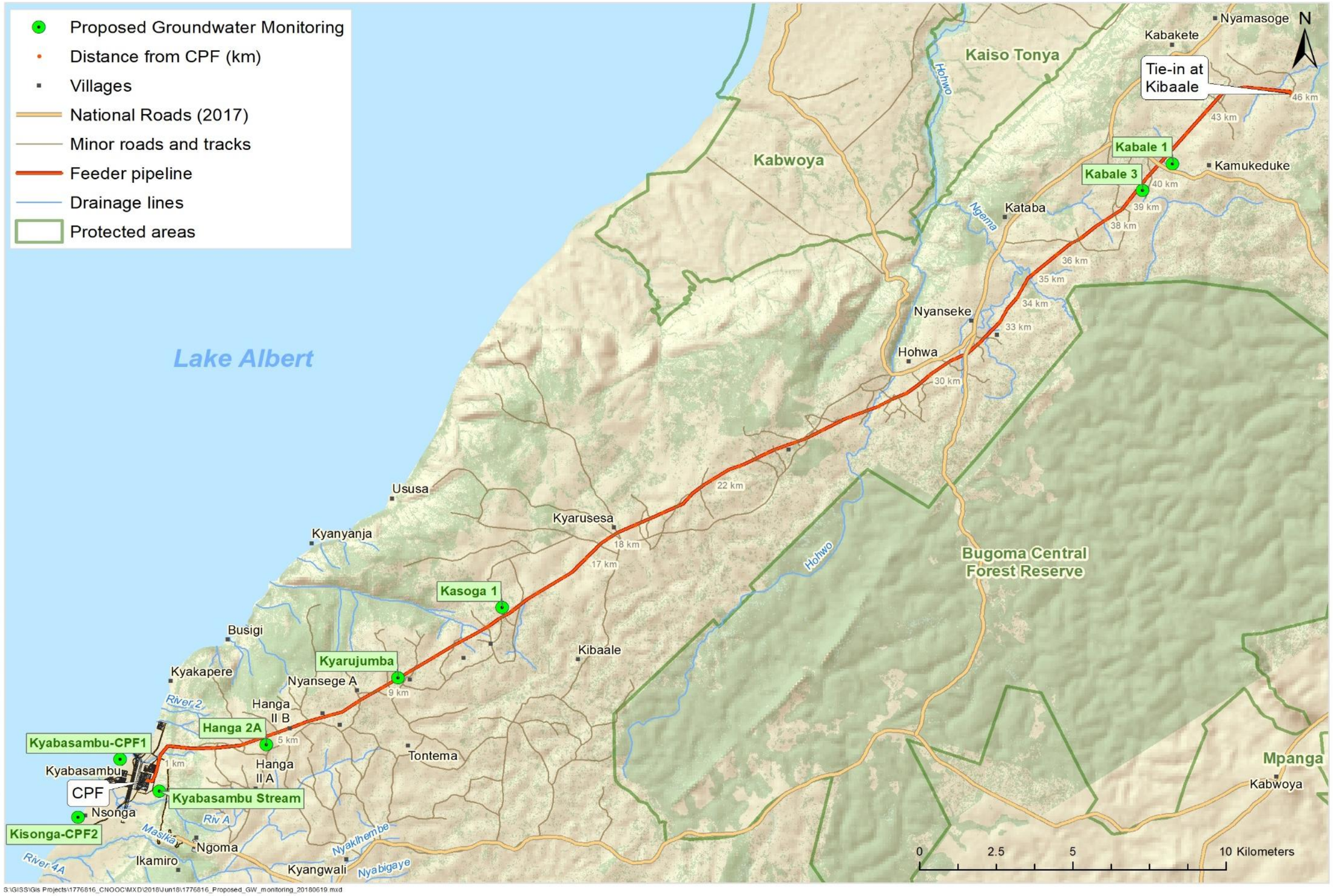

Figure 5: Proposed Groundwater monitoring sites

The Table below outlines the location and parameters that should be monitored for the groundwater sampling sites:

Table 7-2: Water quality sampling for selected groundwater sites for the feeder pipeline

Sample Description	Coordinates (Decimal Degrees)		pH	EC (mS/m)	Total Hardness ($CaCO_3$)	Total Alkalinity ($CaCO_3$)	TDS	Sulphate (SO_4)--	Nitrate (NO_3-N)	Calcium	Magnesium	Sodium	Chloride	Aluminium	Lead	Mercury	Iron	Copper	Manganese	Selenium	Nickel	Chromium	Faecal Coliforms
	North	East																					
US 201 Potable Water Standard (Class 2)			**6.5 – 8.5**	**250**			**1200**			**75**	**50**	**400**	**500**	**0.2**	**0.01**	**0.001**	**0.03 - 3.5**		**0.1 – 0.5**	**0.01**		**0.05**	
Ugandan Drinking Water Standard (NEMA, 1996			**6.5 – 8.0**	**250**	**500**		**600**	**200**	**5**	**-**	**-**	**-**	**-**	**0.2**	**0.01**	**0.001**	**0.03 - 0,5**	**1**	**0.1 - 0.5**	**0.01**	**0.02**	**0.05**	**N**
Hanga 2A	1.257544	30.787487	6.74	35.9	114	152	267	16.41	2.35	24.8	12.4	31.7	9	-	0.01	-	1.03	-	0.10	-	-	-	N
Kyarujumba	1.278398	30.826039	6.6	19.1	59	86	181	6.18	2.21	13.5	6	14.1	0.5	0.12	0.01	-	0.82	-	0.01	-	-	-	N
Kasoga 1	1.300221	30.856499	7.4	47.5	227	252	341	18.04	0.75	61.4	17.5	0.02	1.4	0.2	0.01	-	0.98	-	0.35	-	-	-	Y
Kabale 1	1.438507	31.05286	6.7	44.4	164	198	312	40.26	1.02	34.1	18.7	0.03	5.3	-	0.02	-	0.66	-	0.01	-	0.002	-	N
Kabale 3	1.430126	31.044009	6.99	43.3	169	218	284	17.08	1.15	33.8	20	0.03	3	-	0.01	-	0.22	-	0.13	-	-	-	Y

Surface water monitoring

During the construction phase of the project, every wetland / stream that is crossed must be sampled monthly for the first 12 months and thereafter quarterly for the next 12 months. The Table below outlines the various parameters that should be monitored.

Table 7-3: Parameters for surface water monitoring

Sample Description	pH	EC (mS/m)	Total Hardness ($CaCO_3$)	Total Alkalinity ($CaCO_3$)	TDS	Sulphate (SO_4)--	Ammonia Nitrogen (NH_3N)	Nitrate (NO_3-N)	Calcium	Magnesium	Sodium	Chloride	Aluminium	Lead	Mercury	Iron	Copper	Manganese	Selenium	Cadmium	Arsenic	Nickel	Chromium	Faecal Coliforms (Y/N)
US 201 Potable Water Standard (Class 2)	6.5 – 8.5	250			1200				75	50	400	500	0.2	0.01	0.001	0.03 - 3.5		0.1 – 0.5	0.01	0.01	0.01		0.05	
Ugandan Drinking Water Standard (NEMA, 1996)	6.5 – 8.0	250	500		600	200	1	5	-	-	-	-	0.2	0.01	0.001	0.03 - 0,5	1	0.1 - 0.5	0.01	0.01	0.01	0.02	0.05	N

Socio-Economic monitoring

When monitoring the effectiveness of the Resettlement process, the RAP monitoring programme must be implemented and should incorporate the relevant IFC standards. It is recommended that the social management plans outlined in this document may need to be re-visited and adapted to take into account the Physical Development plan, should it be implemented by the Government of Uganda.

7.2 Inspections and Reporting

7.2.1 Monthly Reporting

The ESO and CLO shall be full time appointments for all projects that require NEMA authorisation, and shall produce a monthly compliance monitoring report, which covers all aspects of compliance with the specification in this FP C-ESMP. The content of the report shall include, but not be limited to:

- Main site activities during the month;
- Community nuisance (e.g. dust, noise);
- Community health and safety;
- Traffic and pedestrian safety;
- Hazardous waste management;
- Non-hazardous waste management;
- Spills and hazardous product management;
- Waste management;
- Influx Management;
- Biodiversity Management;
- Ecosystems services management;
- Cultural heritage;
- Natural heritage;
- Bush clearing and topsoil stockpiling;
- Rehabilitation;
- Control of alien invasive plants;
- Erosion and sedimentation;
- Communication with stakeholders;
- Compliments and complaints;
- Trends in performance;
- Corrective actions / Conformance Certificate; and
- The format of the report may be modified with the agreement of the CNOOC Environmental Coordinator and Public Affairs Coordinator.

7.2.2 Corrective and Preventive Action

The need for corrective action shall arise from:

- Material deviations from a predetermined baseline or limit (as detected by monitoring); or
- General inspections based on FP C-ESMP requirements.

CNOOC shall establish an incident and non-conformance reporting procedure which shall be implemented prior to the initiation of any works. The procedure shall set out a structure for the proper recording of incidents / non-conformances and shall determine the necessary reporting channels.

Incident recording shall include a brief description of the non-conformance with the contract specification, the date it was first logged, the reason for the non-conformance, the responsible party, the result (consequence), the corrective action taken, and any necessary follow up required. Repeated non-compliances in respect of the same issue shall be highlighted. Corrective actions may include:

- Implementation of a specific action to remedy an identified non-conformance; or

- A recommended change in the targets or objectives set in the FP C-ESMPs[23]. In this case, following discussion and agreement with CNOOC, the proposed change shall be brought about in the FP C-ESMP, which shall be submitted to Government as a part of CNOOC's six monthly reporting cycle.

Should a Government Authority audit find that construction activities are causing unacceptable environmental damage, the Contractor shall immediately consult with CNOOC and agree, in consultation with the Government, the remedial measures to be undertaken. Such agreed measures shall be implemented quickly to prevent further damage and to repair any damage that may have occurred.

7.2.3 Environmental Committee Meetings and Reporting

CNOOC/ECO/CLO must establish an environmental committee that includes as a minimum: the ESO, the EC, a member of the Community Liaison Team, and the Contractor's environmental representative. This committee shall meet every two weeks to review environmental performance, including incidents/ non-conformances reported, corrective actions implemented, monitoring results and FP C-ESMP compliance. The meeting must be documented.

7.2.4 Six-Monthly Report

The CNOOC Environmental Coordinator must prepare a report every six months for submission to CNOOC management. The report must:

- Summarise environmental and social performance over the 6-month period and examine any trends and corrective actions taken to comply with the FP C-ESMP;
- Evaluate environmental performance by reviewing monitoring results;
- Consider trends over the period as an indication of improving or deteriorating performance;
- Identify any critical areas of performance that require immediate improvement;
- Evaluate changing circumstances and lessons learned that may need to influence and be reflected in the FP C-ESMP; and
- Set new objectives or specifications in the FP C-ESMP, as appropriate.

7.2.5 Independent Audits

An independent auditor (as specified in shall prepare the project audits. An audit procedure shall be developed by CNOOC to ensure that audits are sufficiently comprehensive and comply with the requirements of the National Environment (Audit) Regulations, 2006 (currently under review), the Regulation on the Environmental Audit Process. The audit procedure shall include:

- Audit approach;
- Scheduling;
- Reporting; and
- Responsibilities.

There shall be two audits, scheduled as follows:

- Post-construction audit report based on a site visit, the review of monthly monitoring reports and discussion with the Contractor's environmental team, CNOOC's environmental team and any other party whose views/ opinions are relevant;

[23] *Modification to the ESMPs may only be made by the CNOOC Environmental Co-ordinator. If the changes are major or are material changes as defined in CNOOCs license, an independent environmental specialist must verify their applicability and the ESMP must be submitted to NEMA.*

- Final audit report at the end of the construction contract and at the end of the maintenance period (one-year post contract sign-off), prior to CNOOC's representative issuing a closure certificate for rehabilitation; and
- Auditing shall consider monitoring results to assess whether FP C-ESMP objectives and targets have been met, and whether there has been any significant non-conformance with the FP C-ESMP and/ or legal requirements. The audit shall also assess whether EMP implementation has been undertaken according to the planned staffing and administrative arrangements and whether respective EMPs are being appropriately updated. The audit shall confirm ascertain whether any identified corrective action has been undertaken and assess the effectiveness of the action as a basis for recommendations to improve contractor performance and the effectiveness of the FP C-ESMP.

8.0 COMPETENCY, TRAINING AND AWARENESS CREATION

8.1 General Training Requirements

The Contractor shall ensure that training is provided to all employees about CNOOC's commitment to conduct the proposed activities in a manner that is respectful to local people, and which minimises the impact on their lands, resources and the natural environment. Training shall take the form of, but not be limited to:

- Induction training;
- Use of educational posters; and
- Daily environmental discussion topics prior to the start of each shift (toolbox talks).

The Contractor shall provide induction training material and key educational posters to the Engineer for approval prior to establishment on site. Ongoing toolbox talks and educational posters shall be structured to meet specific needs, depending on the activity being undertaken. The Contractor shall maintain an updated list of all training sessions for review at the monthly meetings. For induction training, the material shall include (but not be limited to) the following:

- CNOOC's corporate environmental, health and safety policies and applicable Ugandan environmental regulations;
- Avoidance of activities outside of the approved construction right of way;
- Traffic and pedestrian safety;
- Permitted communication and courteous behaviour in interactions with communities;
- Purchase of food and goods from hawkers;
- Management of STIs and malaria;
- Alcohol and drug policy;
- Minimising nuisance impacts on local communities;
- Minimising impacts on cultural heritage (including Chance Find Procedure);
- Minimising impacts on natural heritage (hunting, harassing animals, plant collection, animal collection for sale as pets);
- Dealing with dangerous animals;
- Handling potentially hazardous and polluting substances;
- Use of sanitary facilities on site;
- Dealing with pollution spills;

- Littering;
- Firefighting procedures;
- Procedure for emergency response; and
- Reporting of incidents.

Toolbox talks shall be structured to provide more detail around the specific tasks that are the responsibility of the construction crew. Contractors and CNOOC shall make financial provision for unforeseen potential impacts that may require specific mitigation / management measures.

8.2 Specialist Training Material

CNOOC shall prepare and provide to the Contractor the following field booklets for use by key members of staff and for dissemination to employees, as requested:

- 'Encountering Wild Animals': the booklet shall contain easy to understand, fully illustrated information about wild animals that could be encountered, whether they are dangerous, and the necessary actions to be taken in the event that they are found;
- 'Managing Alien Invasive Plant Species': The booklet is to include all alien plant species listed in the FP C-ESMP, with clear illustrations and recommended methods of eradication; and
- 'Good Relationships with Communities'. The booklet is to provide all personnel with basic rules of courteous communication with community members when encountered in the field.

8.3 Handling of Snakes and other Potentially Dangerous Animals

The Contractor is to train selected members of staff in safe methods of handling snakes and other potentially dangerous animals. Sufficient capacity shall be developed to ensure that there is always a trained member of staff on site in the event that a snake needs to be removed from a work site or camp. The necessary snake handling equipment is to be provided to the employees responsible for removing snakes. All animal relocations are to be photographed, logged and reported at the monthly meetings.

In cases where reptiles that are captured could be rare (including snakes, skinks, lizards) they should be photographed and temporarily kept in safe containment until they can be positively identified and safely relocated by a suitably qualified professional.

9.0 EMERGENCY PREPAREDNESS AND RESPONSE

All emergencies shall be handled according to the existing CNOOC Emergency Plan. CNOOC's Emergency Response Team shall provide immediate response to any significant incident, and the emergency contingency plan will also be integrated with that of the local Municipality, if required.

The Project and Contract manager shall establish and maintain procedures to identify the potential for, and the response to, new accidents and emergency situations in accordance with recognised international standards. The procedure shall also address measures to prevent such situations and to mitigate environmental impacts that may be associated with them.

The emergency procedure(s) shall include the establishment of a network of communication with CNOOC and available emergency services including police, traffic police, local medical and ambulance services, fire departments, community associations, and specialist services that may be available. The emergency plan shall be tested on a regular basis through the use of drills and mock emergencies so as to identify and rectify any shortcomings.

Emergency plan update

When preparing additional measures for dealing with emergencies, the following aspects must be taken into account:

- Details of the method for identifying and accounting for the number of persons on site at all times;

- All employees, contractors and visitors will be made aware of / trained on the contents of the Emergency Plan;
- Allocated responsibilities and specific action details;
- Training of staff to manage emergencies on site;
- Frequency of revision and update of the plan;
- A procedure for activating the emergency plan;
- An Emergency Control Centre (ECC) available on site (the CPF facility will serve this purpose), complete with:
  - Copies of the most recent version of the emergency plan and the most recent version of the site layout and location plans / maps;
  - Diagrams of those service facilities, communications, fire hydrants, safety refuges, building emergency exits and muster points required in an emergency;
  - Relevant equipment for both internal and external communications;
  - A readily available means of recording messages and communications in chronological order; and
  - Sufficient room to accommodate the emergency management personnel.
- Emergency resources including but not limited to:
  - On-site first aid services and facilities must be available;
  - A vehicle, suitable for the transport of casualties, must be available on site at all times;
  - Fixed location firefighting equipment (extinguishers, host reels, etc.) must be distributed and located where necessary, accordingly to a risk analysis and maintained in accordance with manufacturer's instructions;
  - Fire extinguishers must be available in all vehicles and accommodation/administration facilities;
  - A fire water main system, which would include a fire water source, must be available and in good operating condition;
  - All construction personnel must receive basic training in firefighting, first aid and other emergency responses;
  - Regular (quarterly) emergency response drills should be held;
  - The coordination and approach regarding these resources must be consistent with neighbouring operations; and
  - Contractors are to have fire extinguishers in vehicles and/or at the work site.
- An incident command protocol must be drawn up and agreed upon by the local Fire Service to avoid conflict when they arrive on site for large incidents, and a Mutual Aid cooperation agreement with neighbouring sites should be negotiated. This agreement should address all relevant factors, such as financial contributions by both parties, maintenance of equipment, emergency response plan shared between the two sites, location of emergency response vehicles, training etc.; and
- The table below outlines the various feeder pipeline accidents and response options that should be considered by CNOOC Uganda Limited (CUL) for Tier 1 and 2 events and CNOOC international for Tier 3 events:

Tier	Scenario	Total Spill Volume m^3	Prevention Measures	Response Options
Tier 1	Catastrophic booster station leak with surface spreading above ground	80	■ Pressure Control Safety; ■ Pressure Control ESD for the pumps; and ■ Corrosion allowance and protection.	■ Containment and Recovery; and ■ Clean-up and Restoration.
Tier 1	"Chronic" leak during long period of time (6h) – into CPF	0	■ Pressure Control Safety; ■ Pressure Control; ■ ESD for the pumps; and ■ Corrosion allowance and protection.	Surveillance and Monitoring.
Tier 3	Catastrophic BVS leak with surface spreading above ground	1,203.62	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet / outlet Process Safety Control ESD system; ■ Concrete Lined Pressure Monitoring; and ■ System.	■ Containment and Recovery; ■ Clean-up and Restoration; ■ Protection (Diversion / Exclusion or Deflection) - Lake Albert/ Shoreline; and ■ In-Situ Burning
Tier 3	Catastrophic above ground pipeline failure with surface spreading above ground - location: ■ Buhuka Flats (flat unpaved ground, close to lake Albert), into CPF perimeter	28.27m^3, pool 30 m radius	■ Corrosion Protection; ■ (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring; ■ System (PLMS); ■ Inlet / outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; and ■ Clean-up and Restoration.
Tier 3	Catastrophic below ground pipeline with direction subsurface migration - location 2: plateau	1,213.6	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet / outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; ■ Clean-up and Restoration; ■ Protection (Diversion / Exclusion or Deflection); and ■ In-Situ.
Tier 3	Chronic leak during long period of time (1 month) with direction subsurface migration	35.96	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); and	■ Containment and Recovery; and ■ Clean-up and Restoration.

Tier	Scenario	Total Spill Volume m^3	Prevention Measures	Response Options
	location 1 Buhuka flats: permeable soil, shallow aquifer		■ Inlet / outlet Process Safety Control ESD system.	
Tier 3	Chronic leak during long period of time (1 month) with direction subsurface migration location 2: escarpment	35.96	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet / outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; and ■ Clean-up and Restoration.

10.0 DOCUMENT CONTROL

The FP C-ESMP forms the basis for the management of environmental and social impacts on site during the construction phase. Based on the results of the performance assessment and review process, the FP C-ESMP may be modified as the project progresses. Modifications shall only be permitted by the CNOOC Environmental Co-ordinator (EC), who shall retain a single master copy of the FP C-ESMP on site (hard copy and electronic format). All changes to the FP C-ESMP must be tracked, including details of the change, date of the change and name of the reviewer. The EC shall ensure that any modifications to the FP C-ESMP are communicated, explained to and discussed with all affected parties (the Contractor, CNOOC management and any directly affected party who requests this information), and shall be submitted to and approved by NEMA.

CNOOC shall prepare a document control procedure which the Contractor shall comply with. This procedure shall define:

- Document distribution;
- Document retention;
- Management of FP C-ESMP revisions; and
- The document control procedure shall also apply to the Incident and Non-Conformance Reporting.

APPENDIX A

Environmental, Health and Safety Specifications, and Applicable Design Codes and Standards

Environmental, Health and Safety Specifications

Specification code	Specification Name
QHSE-MS - General Volume (L2)	
CUL-QHSE-L2-001	QHSE Committee Rules
CUL-QHSE-L2-002	Infrastructure and Equipment Management Procedure
CUL-QHSE-L2-003	Training Management Procedure
CUL-QHSE-L2-004	Contractor QHSE Management Procedure
CUL-QHSE-L2-005	Communication Management Procedure
CUL-QHSE-L2-006	Document Management Procedure
CUL-QHSE-L2-007	Hazard Identification and Risk Assessment Procedure
CUL-QHSE-L2-008	Legal and Other Requirements Management Procedure
CUL-QHSE-L2-009	MOC Procedure
CUL-QHSE-L2-010	Emergency Preparedness and Response Procedure
CUL-QHSE-L2-011	Engineering Quality Management Procedure
CUL-QHSE-L2-012	Engineering Schedule Control Procedure
CUL-QHSE-L2-013	Preservation of Products and Deliverables Procedure
CUL-QHSE-L2-014	Identification and Traceability Management Procedure
CUL-QHSE-L2-015	Partner Property Management Procedure
CUL-QHSE-L2-016	Monitoring and Measurement Equipment Management Procedure
CUL-QHSE-L2-017	Monitoring and Measurement Management Procedure
CUL-QHSE-L2-018	Audit Management Procedure
CUL-QHSE-L2-019	Incident Management Procedure
CUL-QHSE-L2-020	Nonconforming Product Management Procedure
CUL-QHSE-L2-021	Corrective and Preventive Action Procedure
CUL-QHSE-L2-022	Management Review Procedure
CUL-QHSE-L2-023	QAQC Procedure
QHSE-MS - General Volume (L3)	
CUL-QHSE-L3(GE)-001	QHSE Responsibility Management Specification
CUL-QHSE-L3(GE)-002	Contract QHSE Clause Specification
CUL-QHSE-L3(GE)-003	Quality Management Survey Specification for Contractor Pre-Qualification
CUL-QHSE-L3(GE)-004	QHSE Meeting Management Specification
CUL-QHSE-L3(GE)-005	Employee Participation Specification

Specification code	Specification Name
CUL-QHSE-L3(GE)-006	Stakeholder Engagement Specification
CUL-QHSE-L3(GE)-007	Respiratory Protection Specification
CUL-QHSE-L3(GE)-008	Hearing Conservation Specification
CUL-QHSE-L3(GE)-009	Radiation Management Specification
CUL-QHSE-L3(GE)-010	Ergonomics Management Specification
CUL-QHSE-L3(GE)-011	Fitness For Duty Management Specification
CUL-QHSE-L3(GE)-012	Heat Stress at Work Specification
CUL-QHSE-L3(GE)-013	Alcohol & Drugs Management Specification
CUL-QHSE-L3(GE)-014	Food & Drinking water Hygiene Management Specification
CUL-QHSE-L3(GE)-015	Medical Service Management Specification
CUL-QHSE-L3(GE)-016	Communicable Disease Management Specification
CUL-QHSE-L3(GE)-017	Stress & Fatigue Management Specification
CUL-QHSE-L3(GE)-018	Office HSE Management Specification
CUL-QHSE-L3(GE)-019	Festival and Holiday Safety Specification
CUL-QHSE-L3(GE)-020	Business Travel Specification
CUL-QHSE-L3(GE)-021	Marine Operation Specification
CUL-QHSE-L3(GE)-022	Aviation Management Specification
CUL-QHSE-L3(GE)-023	Land Transportation Specification
CUL-QHSE-L3(GE)-024	Workplace Transportation Specification
CUL-QHSE-L3(GE)-025	PPE Management Specification
CUL-QHSE-L3(GE)-026	Sign and Signal Management Specification
CUL-QHSE-L3(GE)-027	Behaviour Based Safety Specification
CUL-QHSE-L3(GE)-028	Job Hazard Analysis Specification
CUL-QHSE-L3(GE)-029	PTW Management Specification
CUL-QHSE-L3(GE)-030	Excavation Management Specification
CUL-QHSE-L3(GE)-031	Confined Space Entry Specification
CUL-QHSE-L3(GE)-032	Lifting Operation Specification
CUL-QHSE-L3(GE)-033	Electrical Safety Specification
CUL-QHSE-L3(GE)-034	Hot Work Specification
CUL-QHSE-L3(GE)-035	Fire Safety Specification
CUL-QHSE-L3(GE)-036	Working at Height Specification

Specification code	Specification Name
CUL-QHSE-L3(GE)-037	Fall Prevention Specification
CUL-QHSE-L3(GE)-038	Scaffolding Operation Specification
CUL-QHSE-L3(GE)-039	Slip and Trip Prevention Specification
CUL-QHSE-L3(GE)-040	Industry Safety Specification
CUL-QHSE-L3(GE)-041	Suspension and Resumption Specification
CUL-QHSE-L3(GE)-042	Energy Isolation Specification
CUL-QHSE-L3(GE)-043	SIMOPS Specification
CUL-QHSE-L3(GE)-044	Camp Management Specification
CUL-QHSE-L3(GE)-045	Hazardous Chemicals Management Specification
CUL-QHSE-L3(GE)-046	Explosive Management Specification
CUL-QHSE-L3(GE)-047	H2S Prevention Specification
CUL-QHSE-L3(GE)-048	Fuel Management Specification
CUL-QHSE-L3(GE)-049	Fieldwork Management Specification
CUL-QHSE-L3(GE)-050	Working Near or Over Water Specification
CUL-QHSE-L3(GE)-051	Personnel Dynamic Information Management Specification
CUL-QHSE-L3(GE)-052	Environmental Permitting Management Specification
CUL-QHSE-L3(GE)-053	Waste Management Specification
CUL-QHSE-L3(GE)-054	Water Management Specification
CUL-QHSE-L3(GE)-055	Air Quality Management Specification
CUL-QHSE-L3(GE)-056	Noise Management Specification
CUL-QHSE-L3(GE)-057	Biodiversity Management Specification
CUL-QHSE-L3(GE)-058	Aquatic and Terrestrial Habitat Management Specification
CUL-QHSE-L3(GE)-059	Spill prevention and Control Specification
CUL-QHSE-L3(GE)-060	Sediment and Erosion Control Specification
CUL-QHSE-L3(GE)-061	NORM Management Specification
CUL-QHSE-L3(GE)-062	Greenhouse Gas Management Specification
CUL-QHSE-L3(GE)-063	Energy Management Specification
CUL-QHSE-L3(GE)-064	Quality Control Reporting Specification
CUL-QHSE-L3(GE)-065	Materials Inspection and Acceptance Specification
CUL-QHSE-L3(GE)-066	QHSE Inspection Specification
CUL-QHSE-L3(GE)-067	Occupational Health Monitoring Specification

Specification code	Specification Name
CUL-QHSE-L3(GE)-068	Occupational Health Surveillance Specification
CUL-QHSE-L3(GE)-069	Environmental Monitoring Specification
CUL-QHSE-L3(GE)-070	HSE Award Specification

Engineering

Specification code	Specification Name
QHSE-MS – Engineering Volume (L3)	
CUL-QHSE-L3(EN)-001	Design Management Procedure
CUL-QHSE-L3(EN)-002	Design Quality Control Specification
CUL-QHSE-L3(EN)-003	Construction Management Procedure
CUL-QHSE-L3(EN)-004	Construction Quality Control Specification
CUL-QHSE-L3(EN)-005	Inspection and Testing Management Specification
CUL-QHSE-L3(EN)-006	Concealed Work Inspection and Acceptance Specification
CUL-QHSE-L3(EN)-007	Mechanical Completion Inspection Procedure
CUL-QHSE-L3(EN)-008	Commissioning Management Procedure
CUL-QHSE-L3(EN)-009	Engineering Inspection and Acceptance Procedure
CUL-QHSE-L3(EN)-010	Project Handover Procedure

Exploration

Specification code	Specification Name
QHSE-MS – Exploration Volume (L3EX)	
CUL-QHSE-L3(EX)-001	Mud Logging HSE Specification
CUL-QHSE-L3(EX)-002	Mud Logging Equipment Management Specification
CUL-QHSE-L3(EX)-003	Mud Logging HSE Specification in Special Situation
CUL-QHSE-L3(EX)-004	Seismic Drilling Rig Operation Specification
CUL-QHSE-L3(EX)-005	Vibrator Operation Specification
CUL-QHSE-L3(EX)-006	Airgun Source Operation Specification
CUL-QHSE-L3(EX)-007	Explosive Source Operation Specification
CUL-QHSE-L3(EX)-008	Vertical Seismic Profile Logging Specification
CUL-QHSE-L3(EX)-009	Seismic Data Acquisition Specification

QHSE-MS Drilling & Completion Volume

Specification code	Specification Name
CUL-QHSE-L3(DC)-001	Definitions and Responsibility
CUL-QHSE-L3(DC)-002	Drilling and Completion Program Management Specification
CUL-QHSE-L3(DC)-003	Engineering Before Spud Management
CUL-QHSE-L3(DC)-004 Rig	Mobilization and Installation Specification
CUL-QHSE-L3(DC)-005	Drilling Unit Inspection Specification
CUL-QHSE-L3(DC)-006	Personnel Qualification Verification Specification
CUL-QHSE-L3(DC)-007	Preparation for Drilling and Completion Operation
CUL-QHSE-L3(DC)-008	Drilling and Tripping Specification
CUL-QHSE-L3(DC)-009	Running Case Specification
CUL-QHSE-L3(DC)-010	Cementing Operation Specification
CUL-QHSE-L3(DC)-011	Drilling Into Reservoir Specification
CUL-QHSE-L3(DC)-012	Coring Specification
CUL-QHSE-L3(DC)-013 n	Shallow Gas Operation Specification
CUL-QHSE-L3(DC)-014	Cluster Well Management Specification
CUL-QHSE-L3(DC)-015	Steering and Anti-collision Specification
CUL-QHSE-L3(DC)-016	HTHP Wells Specification
CUL-QHSE-L3(DC)-017	Extended Reach Well Specification
CUL-QHSE-L3(DC)-018	Side-track Specification
CUL-QHSE-L3(DC)-019	Managed Pressure Drilling Specification
CUL-QHSE-L3(DC)-020	Well Control Specification
CUL-QHSE-L3(DC)-021	H2S Prevention Specification
CUL-QHSE-L3(DC)-022	Radiation Management Specification
CUL-QHSE-L3(DC)-023	Wireline Logging Specification
CUL-QHSE-L3(DC)-024	Logging While Drilling Specification
CUL-QHSE-L3(DC)-025	Fishing Specification
CUL-QHSE-L3(DC)-026	Drilling and Completion Fluid and Cuttings Management Specification
CUL-QHSE-L3(DC)-027	Assembling, Disassembling and Pressure Test of Wellhead Equipment Specification
CUL-QHSE-L3(DC)-028	Scraping and Flushing Specification
CUL-QHSE-L3(DC)-029	Perforation Specification
CUL-QHSE-L3(DC)-030	Sand Control Specification

Specification code	Specification Name
CUL-QHSE-L3(DC)-031	Acidizing Specification
CUL-QHSE-L3(DC)-032	Fracturing Specification
CUL-QHSE-L3(DC)-033	Production String Tripping Specification
CUL-QHSE-L3(DC)-034	Gas Lift Specification
CUL-QHSE-L3(DC)-035	Coiled Tubing Operation Specification
CUL-QHSE-L3(DC)-036	Slickline Operation Specification
CUL-QHSE-L3(DC)-037	Induced Flow Specification
CUL-QHSE-L3(DC)-038	Flowback Specification
CUL-QHSE-L3(DC)-039	Installation of ESP and Surface Control System Specification
CUL-QHSE-L3(DC)-040	Plug and Abandonment Specification
CUL-QHSE-L3(DC)-041	Tieback and Re-entry Specification
CUL-QHSE-L3(DC)-042	Well Testing Specification

Project Codes and Standards

Specification code	Specification Name
KF-FD-LST-CPF-GE-0001	List of Project Codes and Standards

APPENDIX B

Guide to Permits, License, and Approvals Needed

This table is a non-exhaustive guide only and must be and it is responsibility of CNOOC and contractors to ensure all relevant permits, licenses, and approvals are acquired and complied with.

Type of permit/approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
Groundwater Abstraction Permit/Surface Water Abstraction Permit	The Water Act, Cap 152	■ Section 18: Subsection (1): No person shall construct or operate any works unless authorized to do so under this Part of the Act. ■ Section 18: Subsection (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.	Any abstraction of water from natural surface waters (lake, river or stream) and groundwater (aquifer, spring, etc.)	Directorate of Water Resource Management (DWRM)	■ Form A: Application for a Surface Water Permit. ■ Form B: Application for a Ground Water Permit.	Prior to any project-related surface or groundwater abstraction
	The Water Resources Regulations, 1998	Regulation 3, sub-regulation (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; and May apply to the Director for a water permit.				
		Regulation 3, Sub-regulation (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 ground water permits.				
Construction Permit	The Water Act, Cap 152	■ Section 18: Subsection (1): No person shall construct or operate any works unless authorized to do so under this Part of the Act. ■ Section 18: Subsection (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.	■ Any works or structures constructed in or adjacent to natural waters (rivers or lakes) whether temporary or permanent. ■ Any abstraction of groundwater requiring construction of a borehole.	DWRM	Form F1: Application for Construction Permit	Prior to any project-related water abstraction construction of works or structures in or adjacent to natural waters
	The Water Resources Regulations, 1998	Regulation 16, Sub-regulation (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) re-charging an aquifer; or (c) fitting a motorised pump to a borehole; and May apply to the Director for a construction permit in Form F1 of the Sixth Schedule.				
Waste Water Discharge Permit	The Water (Waste Discharge) Regulations, 1998	Regulation 4, sub-regulation (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.	Any project likely to result in the discharge of effluent or waste water (treated or untreated) onto land or into a water body.	DWRM	Form A: Application for a Waste Discharge Permit	Prior to construction of project facilities (e.g. camps, well pads)
Licence to Emit Noise in Excess of Permissible Noise Levels	The National Environment (Noise Standards and Control) Regulations, 2003	Regulation 12, Sub-regulation (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.	Projects in which it is highly likely that noise levels generated by the proposed activity will exceed permissible levels and cause a significant nuisance effect (e.g. flaring and quarrying).	NEMA	Form NEMA/NC: Application for A Licence To Emit Noise In Excess Of Permissible Noise Levels	Prior to commencement of activities likely to emit noise in excess of permissible levels

Type of permit/approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
Permit to Carry Out a Regulated Activity in a Wetland/River Bank/Lake Shore	The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000	■ Regulation 12, Sub-regulation (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, Sub-regulation (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, Sub-regulation (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.	■ Any regulated activity (listed in the Second Schedule to the Regulations) undertaken in a wetland, or within the protection zone of a riverbank; ■ 100 m from the highest watermark of a river listed in the Sixth Schedule; 30 m for a non-listed river; and ■ 200 m from the low watermark for a listed lake; 100 m for a non-listed lake.	NEMA	Form A: Application for a Permit to Carry Out a Regulated Activity in a Wetland/River Bank/Lake Shore	Prior to undertaking any project activities within wetlands, riverbanks or lake shores
Registration of a Workplace	The Occupational Safety and Health Act, 2006	Section 40, Subsection (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.	Any project requiring the establishment of a work place (e.g. drill site or camp).	■ Department of Occupational Safety and Health; and ■ Ministry of Gender, Labour and Social Development.	Particulars to be Submitted When Applying for the Registration of a Workplace or a Change in the Registered Occupier	Immediately upon (not later than one month) prior to undertaking any site works (construction, operation, pre-construction surveys)
Development Permission	The Physical Planning Act, 2010	Section 33, Subsection (1): A person shall not carry out a development within a planning area without obtaining development permission from a physical planning committee.	Any development involving construction of permanent or semi-permanent structures or establishments such as base camps	District Technical Planning Committee	Form PPA 1: Application for Development Permission	Before commencement of any project activities
Licence for Storage of Hazardous / Non-Hazardous Waste	The National Environment (Waste Management) Regulations, 1999	Regulation 6, Sub-regulation (1): 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.	Any project requiring construction or operation of a storage facility for hazardous or non-hazardous waste (e.g. drill cuttings)	NEMA	Form III: Application for a Licence for Storage of Hazardous Waste	Prior to commencement of any activity requiring temporary storage of hazardous waste
Authorisation to use radioactive sources	The Atomic Energy Act, (Cap 143)	Section 32, Subsection (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	Projects requiring the use of radioactive materials e.g. oil well drilling	Atomic Energy Council, Ministry of Energy and Mineral Development	Notification of Council (requirements listed in Section 34 (2)) Application for an Authorisation (required	Prior to commencement of project activities (specifically well drilling)

Type of permit/approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
		atomic energy and regulated by this Act unless permitted by an authorisation issued under this Act.			information listed in Section 35 (1) of the Act	
Licence to erect or carry on a magazine	The Explosives Act, (Cap 298)	Section 22, Subsection (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.	Activities requiring the temporary storage of explosives	Ministry of Internal Affairs	Licence to erect or carry on a magazine	Prior to procurement and/or use of explosives
Lease Agreement	The 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.	Access to or use of land for project activities	District Land Board	Application for Lease	Prior to temporary use of or access to land for project activities.
	The 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.				
	The 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 b) that person's claim to compensation for land under this Act is settled by the grant of other land or in any other way.				

1.0 INTRODUCTION

This Operational Environmental and Social Management Plan (FP O-ESMP) guides the environmental and social management of CNOOC's proposed development of the Kingfisher Field Development Area (KFDA); as pertains directly to the operational phase of the Feeder pipeline only (hereafter referred to as the project). Environmental and social management of the operation and design phase of Central Processing Facility (CPF), wells, and ancillary infrastructure is addressed separately from this FP O-ESMP. The FP O-ESMP aims to mitigate and enhance potential negative and positive impacts respectively. Responsibilities for implementing mitigation measures are delegated and appropriate monitoring actions are described.

The FP O-ESMP has been informed by the ESIA (and associated specialist studies) conducted by an independent Consultant who was appointed by CNOOC. Key objectives of the FP O-ESMP are to:

- Facilitate compliance with applicable acts, regulations and guidelines;
- Avoid and/or minimise social and environmental negative impacts of the project and maximise positive impacts;
- Recognise that social responsibility and environmental management are among the highest corporate priorities;
- Assign clear accountability and responsibility for environmental protection and social responsibility to management and employees;
- Facilitate environmental and social planning through project life cycle;
- Provide a process for achieving targeted performance levels;
- Provide appropriate and sufficient resources, including training, to achieve targeted environmental performance levels on an on-going basis; and
- Evaluate environmental performance and social responsibility against CNOOCs environmental and social policies, objectives and targets and seek improvement where appropriate.

The FP O-ESMP is a "living document" and information contained in this version will be reviewed and where necessary updated. The findings and recommendations of environmental and social monitoring assessments (annually or more frequently) by internal/external auditors will form the basis of updates to the FP O-ESMP, as required.

CNOOC will develop and implement an Environmental and Social Management System (ESMS) in accordance with their environmental policies to ensure that environmental impacts caused by the Project are continually monitored and to provide a basis for the development of improved impact management measures. The ESMS will be in place prior to construction starting and will accommodate the stipulations contained in the relevant environmental laws and regulations of Uganda.

1.1 What is included?

The FP O-ESMP manages the impacts of all CNOOCs operational activities directly related to the Feeder Pipeline (i.e. the project) from the CPF storage tanks to a delivery point near Kabaale. The FP O-ESMP:

- Defines a set of rules which manage the operation of the project in the license area. These rules are based on detailed work done for the KFDA ESIA and have social and environmental components which all project activities must comply with; and
- Covers the operation of the Feeder Pipeline to the point at which the infrastructure is decommissioned. At this stage, any necessary activities or monitoring is detailed in the Decommissioning ESMP (EP D-ESMP).

Environmental Impact Management Measures

An environmental impact is defined as any change to the environment, whether adverse or beneficial, resulting from a project activity. Listed below are some typical environmental impacts that could adversely affect the environment:

- Pollution of surface and groundwater resources by contaminated runoff;
- Emission of harmful gases and/or particulates into the atmosphere;
- Seepage of contaminants from hazardous materials into soil or water;
- Generation of harmful or nuisance noise; and
- Degradation of visual aesthetics.

The project will go through a life cycle consisting of three phases, namely construction (site clearing, excavation and construction) and operation and design (crude transport), and decommissioning (closure). Activities, their impacts and the management actions required to implement the recommended mitigation measures are dealt with in the sub-sections below.

Applicability of maintenance corrective actions

Maintenance corrective actions are provided in the document but are only applicable to maintenance activities.

1.2 What is excluded?

The FP O-ESMP does not include the management of impacts associated with the CPF, wells, and ancillary infrastructure. The reader is referred to the CPF, wells, and ancillary infrastructure Operational ESMP (O-ESMP, 2017).

Issues related to compensation and resettlement are not addressed in this FP C-ESMP either and the reader is referred to the CNOOC resettlement and compensation process document and associated documentation. Document

Any queries in this regard should be addressed directly to CNOOC (Table 1-1).

The FP O-ESMP also excludes specifications regarding occupational health, hygiene or safety requirements. CNOOC and Contractor obligations in this regard are determined by legislation, and CNOOC's requirements are specified in the Main Contract documents.

1.3 Report Structure and Content

The FP O-ESMP is structured as follows:

- Chapter 2 describes CNOOC's environmental and social policies and commitments in Uganda:
- Chapter 3 describes the operational activities covered by this FP O-ESMP;
- Chapter 4 describes the environmental management structure, including the approach to the FP O-ESMP and the organisational structure and responsibilities relevant to the project;
- Chapter 5 sets out the detailed specifications, including management of the operation and design phase up to the decommissioning phase;
- Chapter 6 describes requirements for performance assessment, corrective action, management review and auditing;
- Chapter 7 sets out requirements for competency training and awareness creation;
- Chapter 8 outlines requirements for dealing with emergencies; and
- Chapter 9 specifies requirements for document control.

The content of the report is set out according to an internationally recognised framework, which includes the following:

- Avoidance/mitigation/management measures required during the project;
- A description of the activities necessary to achieve the mitigation measures;
- Programming and scheduling requirements;
- Definition of responsibilities, resources, communication and reporting structures;
- Specification of performance evaluation requirements;
- Identification of training requirements;
- Identification of monitoring requirements; and

  Identification of audit requirements.

1.4 Key point of contact

The key point of contact for the Kingfisher Field Development Area project is indicated in Table 1-1.

Table 1-1: Details of the developer, CNOOC

Title	**CNOOC Uganda Limited (CNOOC)**
Organisation	CNOOC Uganda Limited (CNOOC)
Postal address	CNOOC Uganda Limited Simba Towers, Plot 22 Acacia Avenue, P.O BOX 7862, Kololo, KAMPALA, UGANDA
Contact Name	Andrew Otuba
Telephone	+256 204 500223
Cellular phone	+256 772 798111
E-mail	Andrew.OTUBA@cnoocuganda.com

2.0 CNOOC POLICIES AND COMMITMENTS IN UGANDA

CNOOC's development philosophies are listed in Table 2-1, while environmental, health and safety specifications are listed in APPENDIX A with relevant project design codes and standards. All documents form part of the FP O-ESMP and must be complied with at all times, as applicable.

Table 2-1: CNOOC development philosophies

Reference	**Philosophy**
KF-FS2-RPT-CPF-SA-0002	Environmental Philosophy
KF-FS2-RPT-CPF-SA-0003	Noise Control Philosophy
KF-FS2-RPT-CPF-SA-0004	Waste Management Philosophy
KF-FS2-RPT-CPF-SA-0007	Design HSE Philosophy
KF-FS2-RPT-CPF-SA-0008	Oil Spill Contingency philosophy
KF-FS2-RPT-CPF-SA-0009	Emergency Response Philosophy
KF-FS2-RPT-CPF-C0-0001	Telecommunication Philosophy
KF-FS2-RPT-CPF-EL-0001	Electrical Power System Philosophy
KF-FS2-RPT-CPF-PR-0006 REV0	Restart & Displacement Philosophy
KF-FS2-RPT-CPF-IN-0001 REV0	Control & Instrument Philosophy

2.1 Leadership and Commitment

CNOOC commits itself to deliver sustainable energy to society by promoting clean, healthy, and green energy development models with their partners along the industry chain. The development of existing natural resources must be undertaken in a safe, efficient, and environment-friendly manner and provide society with clean, reliable, and stable energy that will meet people's reasonable energy demands.

2.2 Corporate Social Responsibilities

During project implementation, CNOOC must communicate their strategy toward social investment in Uganda and in particular, in regions and local communities potentially affected by the project. This strategy should emphasise the distinction between social investment offered as philanthropic good will to support community needs and "mitigation" required to reduce negative impacts. This distinction should be combined with efforts to align ongoing communication processes between the community liaison officers and the local communities. CNOOC currently engages in activities that benefit society and is involved in the following ventures in Uganda: Support to Education Best Performers' Award:

- Basic Skills Training;
- Buhuka School Donation;
- Promotion of culture and Talent;
- Support to Health Sector and Medicine donation for Ntoroko District Health Centers; and
- Disaster Relief Donation.

2.3 Compliance with Legislation and Best Industry Standards

CNOOC is committed to comply with all Ugandan environmental legislation. A legal register in this regard is maintained and regularly updated. CNOOC will also comply with best industry practice worldwide and, to this end, uses the IFC and World Bank Performance Standards, Safeguard Polices and the Equator Principles as a guide to its actions. The following international principles and standards have been incorporated into the FP O-ESMP:

- Equator Principles;
- IFC Documents, including:
  - IFC Performance Standards on Social & Environmental Sustainability, including:
    - Performance Standard 1: Social & Environmental Assessment & Management System;
    - Performance Standard 2: Labour and Working Conditions;
    - Performance Standard 3: Pollution Prevention and Abatement;
    - Performance Standard 4: Community Health, Safety and Security;
    - Performance Standard 5: Land Acquisition and Involuntary Resettlement;
    - Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management;
    - Performance Standard 7: Indigenous People; and
    - Performance Standard 8: Cultural Heritage.
- Doing Better Business Through Effective Public Consultation and Disclosure: A Good Practice Manual, International Finance Corporation 1998;
- General IFC Environmental, Health and Safety (EHS) Guidelines, including Environmental, Occupational Health and Safety and Community Health and Safety and Construction and Decommissioning (e.g., Air Emissions and Ambient Air Quality, Noise); and

- Workers' accommodation: processes and standards: A guidance note by IFC and the EBRD.

2.4 Mitigation hierarchy

The priority of environmental management is always to **avoid adverse impacts**, thereafter management measures with other objectives are considered. Environmental management measures can be varied and the measures themselves can have a variety of objectives. World Bank guidelines for a best practice approach to the management of environmental and social impacts are presented in Table 2-2.

Table 2-2: Primary objectives of mitigation measures for adverse environmental impacts (listed in decreasing order of priority)

Objective	Description
Avoidance	■ Avoiding activities that could result in adverse impacts; and ■ Avoiding resources or areas considered as sensitive.
Prevention	■ Preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having negative environmental impacts.
Preservation	■ Preventing any future actions that might adversely affect an environmental resource. Typically achieved by extending legal protection to selected resources beyond the immediate needs of the project.
Minimisation	■ Limiting or reducing the degree, extent, magnitude or duration of adverse impacts. This can be achieved by scaling down, relocating, redesigning elements of a project.
Rehabilitation	■ Repairing or enhancing affected resources, such as natural habitats or water sources, particularly when previous development has resulted in significant resource degradation.
Restoration	■ Restoring affected resources to an earlier (and possibly more stable and productive) state, typically 'background/pristine' condition.
Offset	■ Creation, enhancement or protection of the same type of resource at another suitable and acceptable location, offsetting for lost resources.

Ref: The World Bank. Environment Department. January 1999. Environmental Management Plans. Environmental Sourcebook Update. Number 25

3.0 PROJECT DESCRIPTION

This section describes the Project area and the nature of the activities covered by the FP O-ESMP. The FP O-ESMP relates solely to the operation phase of the Feeder pipeline starting at its connection point to the central processing facility (CPF) located on the Buhuka flats and extending to the north-east to the point at which the feeder pipeline connects at its tie-in point to the oil export pipeline in proximity to Kabaale.

The Kingfisher Field Development Area project also includes production and beneficiation infrastructure located on the Buhuka flats. This infrastructure is handled under a separate set of environmental and social management plans. These two broad components of the KFDA project are briefly outlined here for reference. A detailed description of all components of project infrastructure are contained in the ESIA project description and summarised in the ESIA summary.

3.1 Wells, flowlines, CPF and supporting infrastructure

The wells, flowlines, central processing facility (CPF) and supporting infrastructure is situated mainly on the Buhuka Flats in the Kingfisher Development Area (KFDA), along the south-eastern side of Lake Albert. The subsurface engineering will entail drilling of wells from four onshore well pads Pad 1, Pad 2, Pad 3 and Pad 4A. A total of 31 wells will be drilled, 20 of which will be production wells and 11 utilised for water reinjection into the formation. The produced well fluids will be conveyed to the CPF through the infield flow lines from the respective production wells. The CPF will process the fluids by separation/removal of the produced water, sand, salts and associated gas (together with small quantities of other material), to produce crude oil that meets the crude oil export standard.

At the CPF the associated gas will either be converted into power to meet the requirements of the facility or converted into LPG No gas flaring is contemplated except in cases of emergency. Excess power generated during the latter part of the production facility's lifespan will be exported to the national grid, but no infrastructure associated with this power export has formed part of the initial ESIA process and has yet to be permitted. Consequently no infrastructure associated with power export forms part of the set of EMPs developed at this stage.

Supporting infrastructure associated with the production facility will include in-field access roads and flowlines, the upgraded jetty, and a water abstraction station on Lake Albert, a permanent camp, a material yard (or 'supply base'), and a safety check station at the top of the escarpment.

3.2 Feeder Pipeline

The FP O-ESMP applies to the Feeder Pipeline which extends from the CPF storage tanks to a delivery point near Kabaale (Figure 1). The feeder pipeline leaves the battery limits of the CPF on the east side of the plant, turning northward to the base of the escarpment, where it turns directly east up the escarpment. The average gradient in this section of the route is 1:3 (Vertical: Horizontal), rising from roughly 650 to 1040 m.a.m.s.l. within a horizontal distance of 740 m. From this point, the pipeline is routed north-eastward in gently undulating terrain, extensively cultivated and interspersed with rural settlements. The route passes south-east of Hohwa and Kaseeta villages and passes immediately north of the planned Kabaale Airport, turning eastward to the terminal point at the proposed Kabaale Refinery. The total length of the pipeline is approximately 46.-km. Detailed mapping of the alignment of the feeder pipeline in proximity to local villagers and houses can be found in the ESIA.

At Kabaale, the Government of Uganda is planning an industrial park which, among other facilities, will include a refinery, associated petrochemical processing factories and airport and related supporting infrastructure. At the delivery point, there will be metering of the crude oil, which will be piped either to the industrial park to feed the refinery and associated petrochemical industry or exported through the East African Crude Oil Pipeline (EACOP), planned from Kabaale to Tanga sea port in Tanzania. The EACOP will be a public - private partnership between the governments of Uganda, Tanzania and oil company(s).

CNOOC's project ends at the delivery point in Kabaale. The industrial park and the EACOP are independent projects that will be planned and developed by others. Apart from their inclusion in the Cumulative Impact Assessment of oil industry activities, they are outside of the scope of the present FP C-ESMP.

It is important for the reader to remind themselves that during the operational phase the pipeline, which is entirely buried along its full length, is monitored from a control point at the CPF. There are routine inspections down the length of the pipeline. Only the central permanent servitude remains unavailable to communities. The outer construction servitudes will have reverted, or will reverted during the operational period, to the respective communities who may utilise that land for shallow rooted agriculture (seasonal crops without penetrating woody root systems).

Thus, other than scheduled maintenance inspections and unplanned events, the level of environmental management required along the pipeline is low during the operational period.

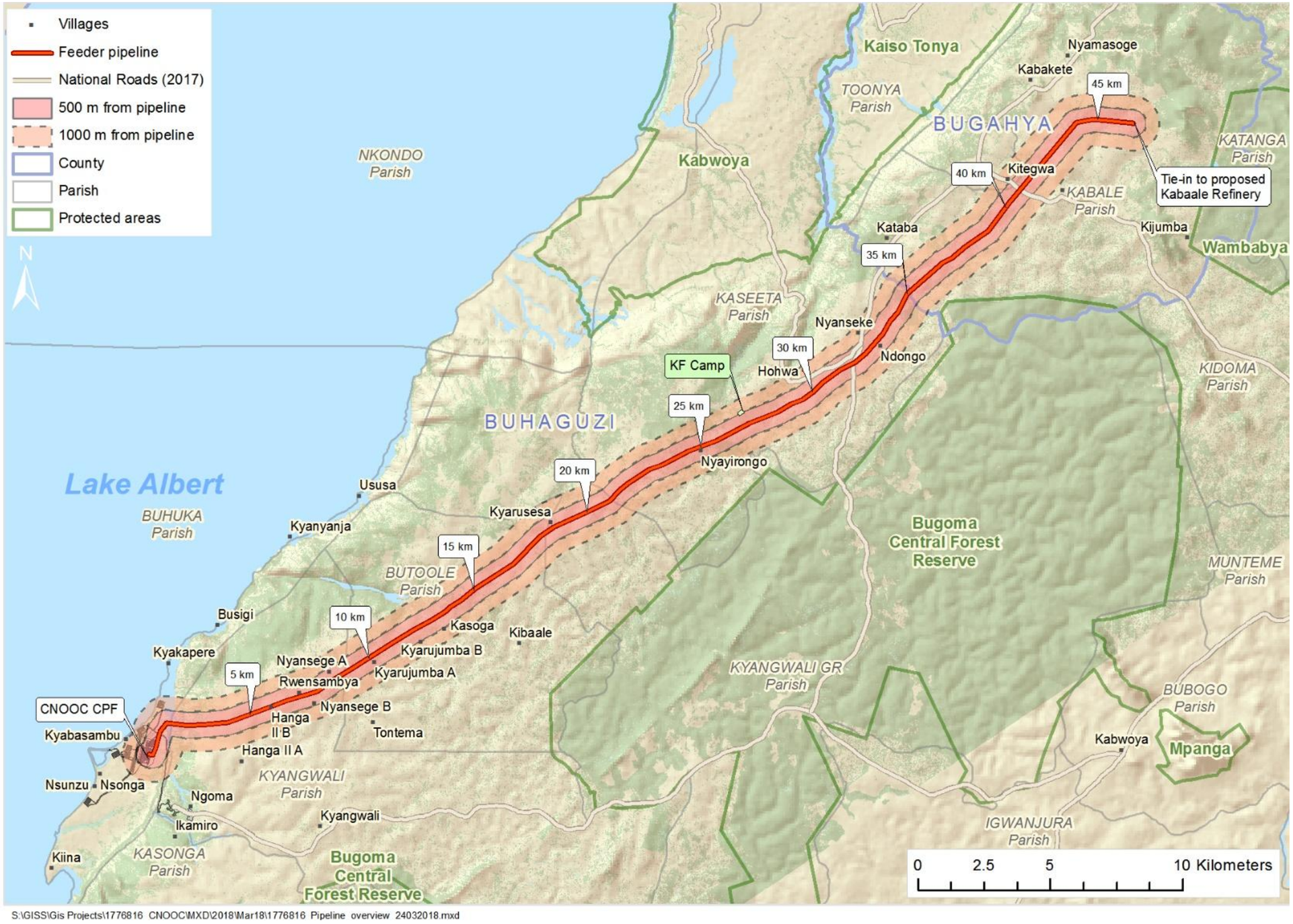

Figure 1: Location of the feeder pipeline

3.3 Operational parameters and pipeline operation

3.3.1 Operating Pressures

Maximum Operating Pressure (MOP) will be 94.6 barg (equivalent to the ASME B31.4 'Design Pressure'. Operating pressures) and will range from near zero to 94.6 barg, with a maximum allowable surge pressure of 10% higher than MOP (i.e. 104.0 barg).

3.3.2 Pipe Wall Thickness

The thickness of the pipeline wall will be determined by the forecast pressures and be sufficient for pressure containment; providing a corrosion allowance and mill tolerance in line with API 5L.

3.3.3 Pipe Burial Depth

The top surface of the pipe will typically be at least 1 m below ground or ~0.8 m in rocky areas to minimise the risk of pipeline exposure and/or damage due to erosion, gulleys, agricultural activities or accidental excavation.

3.3.4 Trench composition

The pipeline will be buried with a surrounding cushion of material, typically a well-graded sand without rocks or large stones in it, to prevent damage to the pipe coating during the process of pipelaying or during operation.

3.3.5 Steep Slopes Trench Breakers

In the steep sections up the escarpment, trench breakers (soil cement or bentonite sacks) and water bars will be installed in the trench to prevent stormwater from undermining the pipe. Select material will be placed for padding under and around the pipe.

3.3.6 External Corrosion Protection

The corrosion protection system will typically consist of a high integrity coating system in combination with an impressed current cathodic protection system. Fusion bonded epoxy (FBE) is the preferred coating and welded joints will be protected using a heat shrink wrap sleeve, applied after the weld is completed.

3.3.7 Cathodic Protection System

An impressed current Cathodic Protection System will apply a small electrical current to the pipeline in conjunction with a sacrificial anode to minimise external corrosion of the pipe due to contact with humic acids. The system creates no risk to humans or animals and should enable the life of the pipe to exceed 30 years.

3.3.8 Pipeline Heating

The pipeline will be heat traced and insulated to ensure operation at Wax Appearance Temperature (WAT) plus 3ºC, if required during operation.

3.3.9 Power and Communications

The fibre optic cable contains 48 cores which will be installed along the feeder line for communication and control. Power for the MLBV's shall be from solar energy and a UPS system. The second half of the pipeline will be powered from Kabaale.

3.3.10 Block Valves

There will be two mainline Block Valve stations contained in vaults and fenced (10 m x 28 m) within the 10 m permanent RoW. Both valves will be fully automated from the CPF with gas over oil actuators powered by bottled nitrogen gas.

3.3.11 Leak Detection

The pipeline will require little maintenance on a day to day basis. The right of way will be monitored continuously for any signs of human activity that could create a risk (e.g. excavation) and for leaks.

A major pipeline failure would be picked up by a pressure drop in the line, recorded in the control room at the CPF by the SCADA system. In some instances, due to the high pressures involved, leaks can be heard and are reported by local people. The optical fibre will also be used for Leak and Shock Detection based upon the FO cables sensing capability to listen to the acoustic/seismic activity along the entire length of the fibre. With Distributed Acoustic Sensing (DAS), the optical fibre is used for both sensing and telemetry. The Leak and Shock Detection System (LSDS) shall have the capacity to be integrated with superior systems of data acquisition and control, in this case SCADA, based upon the normal IEEE802.3, utilizing the TCP/IP communication protocol to be integrated to an Ethernet network. The LSDS will provide continuous, real time monitoring along the entire length of the pipeline and would detect a leak consisting of 1% of the designed throughput in 10 minutes, while a line rupture detection would take typically 5 - 20 seconds, or 40 seconds in a worst-case scenario.

3.3.12 Land Requirements

The permanent right of way will be unfenced and 10 m wide. Community access across the pipeline will not be affected and natural indigenous grass cover will be encouraged over the pipeline to prevent erosion. Grazing over the right of way will be permitted, while cultivation and settlement will be prohibited in this area.

3.3.13 Right of Way Maintenance

Once the contractor has reinstated the works in accordance with the specification and the warranty period has expired, the responsibility for rehabilitation maintenance along the flowlines will revert to the operator. Monitoring of erosion and weed infestation along the right of way will be undertaken as a part of the overall pipeline maintenance programme.

4.0 ENVIRONMENTAL CONTEXT

The project area is sensitive. A detailed environmental baseline has been conducted and is described in the ESIA. Key components contributing to the Environmental and social sensitivity of the area are listed below for context:

- The project is located on the shores of Lake Albert on a land terrace known as the Buhuka Flats. This area is bounded on the east by the escarpment which rises over 400 m above the floor of the Flats and is bounded in the west by Lake Albert;
- There are five villages on the Buhuka Flats. These villages follow largely a traditional lifestyle comprising agriculture and fishing. The project is consequently being developed in very close proximity to people. There are established villages in proximity to all components of the project on the Buhuka Flats and certain infrastructure will be constructed immediately adjacent to established housing;
- There are multiple villages in proximity to the feeder pipeline in the section above the escarpment. This section of the pipeline also flows through the land that is largely cultivated for both personal and commercial uses;
- Given the presence of people in close proximity to the project there are many sites of religious, cultural and archaeological importance in the local area;
- Similarly, the waters of the lake, biota within the lake, lakeshore, escarpment and River systems training from the escarpment to the lake are sensitive from an ecological perspective. In the East the Bugoma Forest is regarded as critical habitat that supports a number of red listed species including chimpanzee. A number of red list species have been recorded, or are known to use, components of the ecosystem in proximity to the project; and
- A number of well, developed wetland systems cross the Buhuka Flats. Similarly, a number of streams and small rivers cross the pipeline route.

The overarching environmental sensitivities within the project area are indicated in a sensitivity map that accompanies this EMP. Detailed maps in relation to specific components of the project, the receiving environment and identified areas of sensitivity are contained within the EIA report which should be read in support of the EMP.

5.0 ENVIRONMENTAL MANAGEMENT FRAMEWORK

5.1 Obligations and responsibilities of CNOOC

CNOOC has the overall responsibility for ensuring that the project is undertaken in accordance with the recommendations of this FP O-ESMP. CNOOC is also responsible for updating the FP O-ESMP, as and when necessary, throughout the life cycle of the project and must ensure that its contractors adhere to the stipulations of the FP O-ESMP. This applies to contractors who may be brought into the project at any point within the project life-cycle.

CNOOC undertakes to manage all project activities in a manner that minimises adverse effects on the environment and the public, maximises socio-economic benefits for the project area and protects the health and safety of employees, contractors, visitors and the general public. To this end, CNOOC will:

1) The FP O-ESMP shall available to all contractors and a print copy retained in the CNOOC site office. Ensure that the contractors are familiar with the FP O-ESMP which forms an integral part of the contract documents entered into with the consulting engineers and all contractors;

2) Educate its personnel, contractors and visitors with regard to the safety, health and environmental (SHE) requirements applicable in general to the project;

3) Provide professional staff to give effect to its safety, health and environmental management commitments;

4) Appoint a competent CNOOC Environmental Coordinator (EC) prior to the commencement of the project. The EC will perform regular inspections to monitor compliance with the FP O-ESMP, provide the appropriate level of management within CNOOC with monthly reports on environmental compliance and performance and provide guidance on the remediation of any unplanned environmental impacts. The EC will also motivate and draft any updates to the FP O-ESMP as and when they become necessary. CNOOC will retain an environmental management capability with appropriate levels of experience throughout the operational life of the facility and pipeline.;

5) Undertake internal FP O-ESMP compliance inspections and audits by the EC. These inspections and audits will include all activities associated with the CNOOC feeder pipeline in its entirety, including activities undertaken by CNOOC's contractors and agents;

6) Monitor, evaluate and report performance in safety, health and environmental protection to the relevant management level within CNOOC; and

7) CNOOC and its contractors will be responsible for implementation of the FP O-ESMP during the life of the development.

5.2 Obligations and responsibilities of contractors

During the operational phase the involvement of contractors is likely to be limited stop however, it is important that the obligations and responsibilities of contractors, should they be appointed at any point during the operational life of the facility, the clearly described. Obligations and responsibilities of contractors are outlined below. Contractors shall:

1) Ensure that they are familiar with the FP O-ESMP and adhere to the requirements of this FP O-ESMP and the environmental guidelines and standards contained therein which form part of the contractual commitment with CNOOC and develop appropriate work method statements;

2) Familiarise themselves with the undertakings and requirements relevant to the project activities contained in this FP O-ESMP, educate their personnel accordingly and ensure that such undertakings and requirements are adhered to;

3) Prepare methods statements describing the methods through which compliance with environmental standards will be guaranteed and submit them to CNOOC for approval.

Although CNOOC may comment on any inadequacies in these statements, the contractor is solely and exclusively responsible in case of non-compliance with the standards contained in this document;

4) Employ techniques, practices and methods that ensure the fulfilment of these requirements, with specific reference to the control of waste and pollution, the prevention of loss or damage to natural resources and the minimisation of adverse effects on users and holders of neighbouring land and the public in general;

5) Take cognisance of the basic information provided in this FP O-ESMP, but shall also verify the accuracy of any information provided, report any inaccuracies or omissions to CNOOC's Management and Field Environmental Manager and, irrespective of any inaccuracies or omissions, comply with the intentions of the requirements stated in this FP O-ESMP;

6) Undertake any remedial measures within a reasonable period of time following the receipt of a written instruction from CNOOC to do so;

7) Take all reasonable and prudent measures to prevent the occurrence of accidents that may compromise the integrity of the environment and/or the health and safety of all persons on site, of all persons on neighbouring land and of the general public;

8) Report to CNOOC or its representative all incidents including but not limited to environmental damage, injuries and/or loss of or damage to CNOOC's physical assets or corporate image;

9) In the event of an incident as described in point 8 (above) occurring, present a detailed plan to:

   a) Restore the environmental conditions, to a state similar to that existing before the incident;

   b) Address any injuries caused in a manner satisfactory to the injured party or parties and CNOOC; and

   c) Prevent the future occurrence of similar incidents.

10) Comply with CNOOC's internal environmental and social policies and standards;

11) Cooperate in periodic FP O-ESMP compliance audits by CNOOC, its external auditors and/or relevant government bodies and provide the necessary information to this effect; and

12) Should government authorities be of the opinion that any activities executed by the contractor cause unacceptable environmental damage or are inadequate to mitigate environmental damage; the contractor shall immediately consult the competent government authorities and CNOOC and reach an agreement about the remedial measures to be implemented. The measures agreed upon shall be implemented so as to avoid the occurrence of further damage and to repair any damage that may have occurred. The contractor will be responsible for all relevant costs related to the applicable environmental damage.

5.3 Organisational Structure and Roles

The organisational structure for the environmental management of a large construction project of this nature is set out in Table 5-1 in conjunction with expected roles and responsibilities. Role nomenclature may vary but responsibilities must be allocated appropriately taking into account the organisation's own man power, organisational structure and the contracting arrangements that are ultimately settled upon.

Table 5-1: Organisational Structure and Responsibility

Role	Responsibility
CNOOC Operation and Maintenance Manager (OMM)	CNOOC management is responsible for oversight of the project. Where an Operation Contractor is appointed for an activity, the CNOOC project manager will liaise with them. In cases where a Contractor is not appointed, the CNOOC manager will be responsible for all oversight of the relevant activity. The manager is responsible for:

Role	Responsibility
	■ Engineering, procurement, and management of the project, including all social and environmental management; ■ Ensuring conformance with accepted standards in the international petroleum industry, and that the Contractor employs up to date techniques, practices, and methods of Operation that comply with the appropriate standard; ■ Minimising general environmental damage, controlling waste, avoiding pollution, minimising loss of or damage to natural resources, and minimising effects on surrounding landowners, occupants, and the public; ■ Keeping the CNOOC Environmental Coordinator (EC) informed about any non-conformance in respect of this O-ESMP and advising the EC of actions that will be taken to rectify non-conformance; and ■ Employing the staff indicated in this table to monitor the Contractor's performance and to ensure that all staff are competent and fully briefed about the nature of the relevant project activity.
Site Engineer (Engineer)	■ The Site Engineer is CNOOC's representative on site; and ■ The Community Liaison Officer (CLO) and Environmental Site Officer (ESO) must report directly to the Site Engineer.
Operation Contractor (including all sub-contractors)	■ The Operation Contractor is responsible for all project activities. ■ The FP O-ESMP must form part of the Operation Contractor's agreement with CNOOC and shall be legally binding. ■ The Operation Contractor (or 'Contractor') must be responsible for the actions and performance of all sub-contractors. ■ The Contractor shall be responsible for ensuring compliance with relevant Ugandan legislation applicable to environmental management. ■ The Contractor must take proactive steps to ensure that the requirements in the FP O-ESMP are met, including, but not limited to: ▪ Employment of competent and dedicated staff to ensure implementation of the FP O-ESMP. All staff responsible for environmental management of the contract must be approved by CNOOC; ▪ Active participation of environmental management staff in the planning, Operation, and re-instatement of works; and ▪ Regular interaction with CNOOC's environmental staff. ■ Staff must be instructed about the relevant environmental sensitivities and the specific measures that each employee must implement to meet the environmental protection and management standards defined by the FP O-ESMP.
CNOOC Environmental Coordinator (EC)	■ The EC must be a senior CNOOC employee with extensive environmental work experience. The EC must liaise with consultants or specialists as needed and monitor environmental performance on the project, as well as review of monthly non-conformance reports. The EC must communicate with CNOOC regarding any significant non-compliance by the Operation Contractor and agree the steps to rectify the non-compliance. ■ The EC must support the ESOs and CLOs and approve the ESO/CLO monthly reports. ■ The EC can propose FP O-ESMP updates to NEMA and make necessary changes to the FP O-ESMP if approved by NEMA. ■ The EC must oversee the re-instatement of the site and provide final sign-off following acceptable re-instatement.

Role	Responsibility
	■ The EC, in conjunction with the CNOOC Liaison Officer – Community and Stakeholder Affairs (LOCSA), must coordinate and manage all necessary communication with the Government (local, provincial, and national).
CNOOC Liaison Officer – Community and Stakeholder Affairs (LOCSA)	■ The LOCSA is a permanent CNOOC officer responsible for all ongoing communications with communities and stakeholders affected by the project. ■ The LOCSA must guide the CLO(s) appointed under CNOOC's staff, where necessary, and must support interaction between the CLO(s) and relevant community leaders. ■ The LOCSA must review the ESO/CLO monthly reports and must work with the EC on matters of common interest, including review of non-conformances in the reports. ■ Together with the EC, the LOCSA must initiate, coordinate, and manage all necessary communication with the Government (local, provincial and national).
CNOOC Local Procurement Officer	The CNOOC local procurement officer must implement enterprise and supplier development strategies and tactical plans (including necessary supporting business and governance processes, procedures, systems, and tools) in order to enable CNOOC to meet its preferential procurement and Enterprise and Supplier Development (ESD) targets. The officer must also: ■ Identify, nurture, grow, and leverage internal and external partnerships necessary to successfully execute the local content strategy, particularly as it relates to ESD and local procurement; and ■ Oversee the management of the delivery of business and technical support activities provided to CNOOC's ESD beneficiaries.
Community Liaison Officer (CLO)	■ Community Liaison Officers (CLOs) must be employed full time under CNOOC's staff as the principal interface between communities and the Operation Contractor. They must guide and advise the Operation Contractor with communication and local community issues through ongoing liaison and monitoring of relations with communities, identification of problem areas, and conflict resolution. ■ The CLO(s) must report directly to the Site Engineer. Where advice about community issues is required, the CLO shall notify and request assistance from the LOCSA. ■ The CLO must comply with all requirements for ongoing communication with affected communities. ■ The CLO(s) should be hired from the District in which the Project is proposed and must: ▪ Be trained by CNOOC and LOCSA about all relevant aspects of the project; ▪ Have experience in communication with communities and local and district authorities; ▪ Be able to communicate in local languages; and ▪ Be able to evaluate the effectiveness of specified social management measures and provide solutions to problems in respect of the implementation of the FP O-ESMP. Responsibilities of the CLO shall be set by CNOOC and may include the following: ■ Informing communities of upcoming activities and progress; ■ Organisation of occasional visits to site for District Government and community leaders; ■ Educating communities about traffic safety where they are near or on project access routes;

Role	Responsibility
	■ Implementation of support for labour agreements (among others) through communication with government, village leaders, and community members; ■ Liaising between CNOOC, communities and NGOs/service providers implementing community projects; ■ Communication and management of the Compliments and Complaints Register; ■ Reporting of transgressions of foreign workers in the communities to the Site Engineer and the EC; and ■ Preparation of monthly reports with the ESO.
Environmental Site Officer (ESO)	The Environmental Site Officer (ESO) must be appointed under CNOOC's staff and must be employed on a full time basis. The ESO must perform all tasks necessary to monitor the performance of the contractor with respect to the environmental specifications in the FP O-ESMP. Specific responsibilities of the ESO include: ■ Ensure the protection of the environment; ■ Perform all of the day-to-day tasks necessary to monitor the performance of the Contractor(s) with regard to the requirements of the FP O-ESMP; ■ Liaise with the Site Engineer and the EC in the case of incidents, non-conformance, or any matter where the course of action is unclear; ■ Verify the accuracy of the information contained in the FP O-ESMP and bring any errors, omissions, oversights to the attention of CNOOC and EC; ■ In consultation with the EC, guide all aspects of the re-instatement process as applicable; and ■ Prepare monthly reports with the CLO(s). The ESO must be fully briefed about the project, and receive any necessary training from CNOOC and the EC. Through the Site Engineer, the ESO shall guide and advise the Contractor in respect of compliance with the FP O-ESMP on environmental issues. This will be achieved by ongoing internal coordination meetings, inspections/ monitoring of the project, identification of problem areas, and provision of actions plans to avoid environmental damage. The ESO must liaise frequently with the CLO(s) and with the Contractor's environmental staff (ECO). The ESO must have experience in environmental management and be capable of evaluating the effectiveness of specified management measures and be familiar with environmental management techniques. The ESO must be capable of proposing solutions to problems identified in respect of the implementation of the FP O-ESMP.

5.4 Communication with Government, Communities and Stakeholders

Communication with the Ugandan Government regarding environmental management matters will be via CNOOC's Environmental Coordinator and Liaison Officer – Community and Stakeholder Affairs (LOCSA). Communication with local structures shall be undertaken by the Community Liaison Officer(s) (CLOs) appointed for the construction period, with assistance, where necessary, from the LOCSA.

Communication regarding resettlement and compensation will be undertaken by CNOOC's Manager Stakeholder Relations (MSR) or their appointed representatives. Close liaison shall be maintained between MSR and the CLOs in the field. Where necessary, concerns or issues raised by communities and gathered by the CLOs shall be passed on to the MSR team for action.

5.5 Permits and licenses

Applicable approvals, permits, consents, and licenses relating to the environment should be in place prior to all project activities and must be stored in a location which is easily accessible to appropriate staff on site.

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

The FP O-ESMP incorporates discipline specific management plans that form part of an Environmental Management System (EMS). The environmental management system encompasses a number of plans listed below. Not all of these are relevant to the operational phase of the feeder pipeline. They reflect the suite of plans in relation to the Kingfisher field development area.

In the management tables which follow this section, the plans relate specifically to operational activities of the Feeder Pipeline.

CNOOC will implement, maintain and update the FP O-ESMPFP O-ESMP:

1) Air Quality management plan;
2) Noise and vibration management plan;
3) Biodiversity management plan
4) Water management plan;
5) Marine works management plan;
6) Traffic management plan;
7) Community health, safety and security management plan;
8) Waste management plan;
9) Cultural heritage management plan;
10) Labour working condition and employment management plan;
11) Pollution prevention and response management plan;
12) Emergency management plan;
13) Influx management plan;
14) Ecosystem service management plan;
15) Visual assessment management plan;
16) Soil erosion and siltation management plan;
17) Greenhouse gas management
18) Health management plan

6.1 Pre-operation planning

During final design and construction changes can occur to the project configuration that require slight amendment to environmental management plans. Consequently, before the time of commencement of operations it is important to review the operational management plan to ensure that it remains appropriate to the project configuration as built. For this reason, the following steps should be implemented by the CNOOC ECO:

- Critically review the as built project configuration in relation to that planned as reflecting in the ESIA and management plans. Take account of any changes to legislation;
- Specifically take account of any additional information that has come to light through the construction period. Such additional information could relate to chance finds in relation to cultural heritage, any particular problems encountered during construction which necessitated deviation from the original plan et cetera;
- Taking account of such information, then critically review the operational management plans for the pipeline to verify that they remain in line with the as built alignment, project configuration and any new environmental social information has come to light. If not, amend the plans appropriately; and
- Ensure that operational staff, contractors remaining on site and appropriate regulatory authorities are informed of any changes to the management framework. Print an updated copy of the management plan to retain in the environmental management site office.

6.2 General Administration and Liaison

6.2.1 Administration and General Issues

Table 6-1: Standard Controls for administration and general issues

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator/Performance Criteria[1]	Schedule	Additional Reference
1.	Release of contracts	Compliance with FP O-ESMPFP O-ESMP	This operational plan the FP O-ESMP shall available to all site personnel and any contractors remaining on the site throughout the operational life of the pipeline.	CNOOC OMM	■ Printed copy of the FP O-ESMP available in the site environmental managers office, or other prominent place as determined by CNOOC.	At all times	
2.	Compliance with relevant legislation	Compliance with relevant legislation	In all cases, the requirements of Ugandan legislation shall be met (see APPENDIX A for list of relevant Environmental Legislation at the time of initial ESIA). CNOOC shall be immediately notified of any breach in the legislation or pending breach. This notification shall be accompanied by full details of the contravention or pending contravention and shall be accompanied by a corrective action plan.	Construction contractor CNOOC OMM /QHSE	■ Project records; ■ Absence of legal warnings/prosecutions; and ■ ESO/CLO monthly reports with reference to legal non-compliances.	At all times	
3.	Hiring of Sub-contractors	Compliance with FP O-ESMP	CNOOC shall be responsible for ensuring the compliance of all parties working on their facility with this FP O-ESMP.	CNOOC OMM /QHSE/contractors	■ Evidence of compliance by all sub-contractors.	At all times	
4.	Regulating of working period and work hours	Nuisance avoidance	Excepting for emergencies, such as the rupturing of the pipeline, all maintenance work shall be restricted to between the hours of 06h00 and 18h00 unless otherwise approved by CNOOC following consultation with affected communities. Any approved night work shall not create a nuisance in surrounding communities (i.e. lea than 60dBA at the boundary fence).	CNOOC OMM /QHSE	■ ESO/CLO monthly reports; ■ Absence of complaints; and ■ Contractor's reports on weekly hours worked by personnel.	At all times	
5.	Personnel HSE management	Adequate HSE controls ensuring a safe work environment	A site and project-specific HSE induction shall be drafted prior to commencement of maintenance work and be presented to all employees before they start the work. The EC shall approve the content of the induction. A register shall be kept by the Contractor of all personnel who attend the induction.	Construction contractor Environmental Coordinator CNOOC OMM	■ Inclusion in training/induction programme(s); and ■ Register of attendance of induction.	Prior to employment	
6.	Personnel management	Safe work environment and no unauthorised fires	Smoking is only permitted in designated areas and where there is no risk of starting bush fires (subject to normal safety precautions about flammable materials).	Construction contractor CNOOC OMM	■ Inclusion of smoking areas; and ■ in training/induction programme(s).	At all times.	
7.	Work site employment	• Employment of appropriate personnel • Discouragement of population influx in the project area by job seekers	Workers shall not be employed at the gate of any work site.	Construction contractor CNOOC OMM	■ No soliciting of work by workers observed at the campsites or work locations.	At all times.	
8.	House-keeping	Safe work environment and no unnecessary pollution	Working areas shall be kept tidy and free of litter at all times.	Construction contractor CNOOC OMM /QHSE	■ Inclusion in training/induction programme(s); and ■ Absence of litter on site.	At all times	
9.	Implementation of disciplinary procedures	Appropriate correction of non-compliance with FP O-ESMP	Appropriate disciplinary procedures shall be taken against offenders by the contractor's management in the event of deliberate non-compliance with any of the specifications in this FP O-ESMP and notification shall be given to the Site Engineer of the actions taken.	Construction contractor CNOOC OMM	■ Evidence of disciplinary procedures where deliberate non-compliance is registered.	At all times	

[1] *Performance indicators are only specified where there may be additional requirements to the verification that the requirement / specification have been met. Additional monitoring requirements are specified under Section 7.0. Note that number of incidents, audit findings etc. shall also be used as indicators of performance.*

Ref.	Aspect / Activity	Objective	Management Action	Responsibility	Indicator/Performance Criteria[1]	Schedule	Additional Reference
10.	Alcohol and drug use	Safe work environment	No alcohol or narcotic substances shall be permitted on site.	Construction contractor CNOOC OMM /QHSE	■ Records of disciplinary procedures.	At all times	

6.2.2 Community, Stakeholder and Government engagement

A key management principle during the operational phase of the project shall be that of ensuring that the rights of the inhabitants are not infringed and that all operations are conducted in a manner that is respectful of the local residents and the land and resources that belong to them. Most people are tolerant of short term impacts if treated courteously and this shall be a guiding principle of all CNOOC's contractors' activities and relationships with communities.

The project area is characterised by the following socio-economic conditions, which shall always be taken into consideration:

- Subsistence living;
- Extreme poverty;
- Strong dependence on local natural resources;
- Lack of health and education facilities, access roads; and
- Very limited employment opportunities.

Table 6-2: Standard Controls for community, Stakeholder and Government engagement during the operational period.

Ref.	Aspect	Objective	Standard control / Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
1.	Management of community expectations	Understand and manage community expectations	Community leaders and residents may have expectations that CNOOC will play a supporting and developmental role within the area and that the project will have other positive economic benefits. In order to encourage realistic expectations, close communication shall be maintained between local communities and the Community Liaison team (the CNOOC LOCSA and the Community Liaison Officer/s appointed) with the objective of clarifying the limitations to CNOOC's involvement in development initiative in project-affected communities.	LOCSA CLO CNOOC OMM /CA	■ Number and nature of communication initiatives; and ■ Minutes of meetings and correspondence indicating the activity of the CLOs and LOCSA.	At all times	
2.	Communication with local leaders	Open and transparent communication with community leaders and residents	Access over land, the integrity of fences, control of bush fires, littering, harassment of domestic and wild animals, sedimentation and contamination of ground and surface waters, damage to landscape and vegetation, nuisance (noise and dust) and all such environmental matters, shall be controlled in the best interests of the local inhabitants and shall, where necessary, be the subject of open communication between the parties.	Construction contractor LOCSA CLO CNOOC OMM /CA	■ Record of compliments/complaints; ■ Number of complaints registered and resolved; ■ Nature of corrective actions taken; and ■ Trends in complaints.	At all times.	
3.	Development of a communication plan	Formalise a communication plan	CNOOC, in consultation with the LOCSA, shall prepare a Communications Method Statement for the operational phase, based on the principles and procedures established in CNOOC Communications Plan (2017, or as updated), including: ■ details of stakeholders; ■ methods of communication at the various levels of Government and among local stakeholders; ■ responsibilities for communication during the operational phase itself; and ■ details of the messages that are to be communicated to the different interest groups Any local areas where there may be particular sensitivities due to proximity to operational activities shall be highlighted and specific additional measures for liaison with the affected people shall be determined.	Public Affairs Coordinator LOCSA CNOOC OMM /CA	■ CNOOC-approved Communications Plan; and ■ Records of communication according to the requirements of the plan.	Pre-construction	

Ref.	Aspect	Objective	Standard control / Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
4.	Communication with local communities	Ongoing communication with communities	Ongoing communications with communities during the operational phase shall be the responsibility of the CLO(s). Where maintenance teams are active, the frequency of communication with local communities shall be increased. Records of all communication shall be kept and regularly updated.	CLO CNOOC OMM /CA	■ Records of ongoing communication; and ■ Compliments and Complaints Register and necessary, follow up actions.	Ongoing	
5.	Communication with local communities	Communication through formal forums	Where CNOOC already has existing communication forums or can re-establish these where they have ceased to function, they shall be considered for use before establishing new forums. Contractors are obligated to source labour via the Community Liaison Forums (CLF) in consultation with CLO(s) and LOCSA.	Public Affairs Coordinator LOCSA CLO CNOOC OMM /CA	■ Use of pre-existing forums, where available.	Ongoing	
6.	Development of Complaints Register	Documentation of compliments and complaints	Each operations-affected community shall be provided with a Compliments and Complaints Register and informed by the CLOs about how to use it. Information about its use shall also be included in the register itself. Marginally literate and illiterate people are to be encouraged to obtain assistance to use the register or to contact the CLO by phone or meet with the CLO on days when the register is checked. The Register in each community shall be inspected weekly by the CLO as a part of ongoing communication and any complaints are to be resolved within one week. The Register be structured in accordance with the requirements set out in the CNOOC Communications Plan.	CLO CNOOC OMM /CA	■ Compliments and Complaints register in each affected community; and ■ Compliments and Complaints and necessary, follow up actions.	Register to be provided to local communities prior to the commencement of any construction activity. Weekly check of register by the CLO	
7.	Communication with stakeholders	Structured communication of project information to responsible parties	The Contractor shall not deal directly with surrounding communities about operations-related issues. CNOOC shall bring to the Contractors' attention any issues that are raised by the community that require action. The Contractor's ECO shall stay in regular daily contact with the CLO. When requested to do so by the CLO, the Contractor shall attend community meetings with the Community Liaison Team to resolve any issues that have arisen.	CNOOC OMM /CA Construction contractor CLO	■ Records of communication with communities and resolution of issues; and ■ Meeting and discussion records in the monthly ESO/CLO reports.	Ongoing	
8.	Prohibition of access / trespass of project personnel into community homesteads and private property	Avoid public nuisance arising from trespass of project personnel into community private property	Access by all project personnel to homesteads and associated lands outside of the project footprint shall be prohibited.	Construction contractor CNOOC OMM /CA	■ Absence of complaints.	At all times	
9.	Skills Development	Extend trainings for skills development to communities in proximity to project corridor	■ Collaborate with the Petroleum Authority of Uganda (PAU), which is tasked with establishing, maintaining and operating a national human capacity register for the petroleum sector to ensure that CNOOC contributions in the form of bursaries and scholarships support the development of an appropriately skilled labour force; ■ Align the CNOOC Education and Training related support initiatives as well as in-house training and competency development of Ugandan nationals with the critical and scarce skills requirements of the Oil and Gas sector; ■ Consider promoting a process of Recognition of Prior Experience (RPE) and Recognition of Prior Learning (RPL) in collaboration with tertiary technical training institutions that will allow the accrual of credit for informal and non-formal skills development into the formal skills development sector; ■ Promote STEM at school level by incorporating support to the development of science laboratories at schools, strengthening	CNOOC OMM /CA	■ Training records.	Ongoing	

Ref.	Aspect	Objective	Standard control / Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
			education in maths and science at schools and the development of well-stocked school libraries as a specific focus of CNOOC Corporate Social Responsibility (CSR); and ■ Support initiatives that will promote and strengthen the levels of competence of master artisans and crafts persons within the Technical Education and Training (TVET) system, and design mechanisms that will support the entrance of female scholars into TVET institutions.				
10.	Local Business Development		■ Develop comprehensive strategies to build the capacity of local service providers to compete within the local and regional business environment, ideally on a diversified basis that does not only serve the oil industry; ■ Develop a local procurement policy and steadily increase project spend in support of local capacity and the further development of the business supply chain through appropriate purchasing and business development strategies; and ■ Identify and support programmes (including related to micro-financing) in support of vulnerable groups as required (elderly, single women or child headed households).	CNOOC OMM /CA Operational contractor	■ Local procurement content.	Pre-operational	
11.	Exploitation and Anti-corruption		■ Ensure that CNOOC meticulously implements all anti-corruption, business ethics related and internal compliance Policies and Programmes already in place, including the CNOOC Limited Code of Commercial Behaviour and Conduct of Employees, the Procedures for Handling Violation of Rules of CNOOC Limited Employees as well as its Guidelines for Overseas Operation with Compliance of CNOOC; ■ Promote transparency in reporting of all revenue payments to the GoU and, especially, consider becoming a member company of the EITI; ■ Voluntarily collaborate with and support multi-stakeholder forums that engage questions of ethics and corruption in the oil and gas industry, including Civil Society Organisations, NGO coalitions as well as the Uganda Human Rights Commission (UHRC); ■ Contribute to economic development and infrastructure improvement in the project area, in partnership with central, district and local government; and ■ Develop a transparent community development and contribution policy.	CNOOC OMM /CA/L&C	■ Anti-corruption policy.	Ongoing Pre-operational	
12.	Housing and Land		■ Ensure that there is clarity amongst land users regarding the restricted nature of the ROW, the way it will be maintained as well as the details of the mechanism that will be used to mark the land corridor (e.g. marker posts); ■ Remove alien invasive species along the servitude regularly, as a part of normal pipeline servitude maintenance; ■ In the event that any major maintenance is required, inform surrounding landowners and communities in good time and notify them of any temporary restrictions affecting access in the area where maintenance is taking place; ■ Promote and support good environmental governance from central, district and local level including in respect of the protection of environmentally sensitive and protected areas; ■ Engage the Bunyoro Kitara traditional leadership in active and ongoing initiatives and efforts to promote environmental conservation and protection;	CNOOC OMM /CA/L&C	■ Notifications to affected landowners.		

Ref.	Aspect	Objective	Standard control / Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
			■ Collaborate with central and district government in planning for as well as in the sustainable implementation of infrastructure and services that will ease land and natural resource impacts; and ■ Monitor crop production in the temporary right of way to establish whether there is any measurable difference between agricultural productivity on the right of way compared with immediately adjacent areas. If demonstrated to be necessary, re-evaluate compensation payments to affected landowners.				

6.3 Air Quality Management Plan

The feeder pipeline is buried. There are no specific issues pertaining to air quality during the operational and maintenance periods other than those associated with dust entrainment from light vehicle traffic moving along local roadways and the permanent right of way.

Ref.	Aspect / Activity	Potential impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Frequency	Additional Reference
	Pipeline maintenance activities	Dust nuisance due to maintenance of sites	Limit community dust disturbance Limit community dust disturbance	Dust caused by Operation/maintenance activities shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. The contractor shall comply with the Ugandan legal requirements and IFC/World Bank air quality guidelines for suspended particulates. These are as follows: ■ Suspended Particulates (Ugandan daily standard): 200 µg/m^3; ■ PM_{10} (IFC daily standard): 50 µg /m^3; and ■ PM_{10} (IFC annual standard): 20 ug/m^3. Where considered necessary by CNOOC, the Operation/maintenance contractor shall demonstrate compliance with the above standard by monitoring of dust using passive air quality monitoring devices. ■ Dust suppression measures to meet the standard shall include dust suppression along roads using water carts and, where necessary, 'environmentally friendly' surface binding products to achieve dust reduction; ■ The Operation/maintenance contractor shall ensure that sufficient watering capacity is available on site to dampen dust at all work areas and along access roads used by Operation/maintenance traffic, particularly in areas where there are nearby communities; and ■ These measures will be applicable where repeated trips are necessary for purposes of maintenance, in particular in proximity to schools and through villages.	CNOOC OMM /QHSE Operation/ maintenance contractor LOCSA CLO	■ Monitoring of dust levels in environment; ■ Compliance with dust standards at nearest sensitive receptors; and ■ Complaints recorded in Compliments and Complaints Register. ■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; and ■ Records of monitoring in ESO weekly and monthly reports.	During operation.	

6.4 Noise and Vibration Management Plan

The feeder pipeline is buried. Consequently, during the operational period no operational noise is expected to be experienced other than light vehicle passage along the servitude for purposes of inspection. No specific noise management and mitigation measures are documented.

Ref.	Aspect / Activity	Potential impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Pipeline Maintenance Activities	Increased noise levels from operation of vehicles during maintenance works, operation of export pumps at the CPF	Limit community noise disturbance	■ Undertake a pre-assessment of the location of any maintenance work prior to it being done and evaluate the potential noise impacts in the context of the activity to be undertaken and the proximity to local habitation and other noise-sensitive uses. If there is potential for impact, ensure that the affected people are consulted and are aware of the work schedules, and consider reasonable measures to reduce noise nuisance during the maintenance period. ■ Noise levels need to be in compliance with Ugandan Noise standards for operations. In their absence, the World Health Organization guidelines for daytime and night-time noise should be adopted; ■ Diesel powered and/or mobile equipment to be used for maintenance purposes, such equipment shall be appropriately muffled, well maintained and, where possible, (on-site generators) positioned so as to cause the least impact on adjacent communities and households; ■ Avoid night work at all times during operation; . ■ Should night-time work be necessary, under emergency circumstances, CNOOC CLO's are to forewarn communities of the need for night-time work and ensure field teams take every precaution to limit the extent of noise generating equipment used at night and position such equipment, where possible, in a manner that it minimises impact on households: ▪ Where night time work is necessary utilising noisy equipment, CNOOC to make available hearing protection (standard PPE soft disposable earplugs) to community members to minimise sleep disruption.	Operation/ maintenance contractor CNOOC OMM /QHSE	■ Records of regular community liaison and discussion about nuisance issues. ■ Noise monitoring records	At all times	■ CUL-QHSE-L3(GE)-056 Noise Management Specification;

6.5 Biodiversity Management Plan

The biodiversity management plan for the operational phase of the Feeder Pipeline is presented in Table 6-3.

Table 6-3: Biodiversity management plan

Ref.	Aspect / Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Collecting or harvesting fruits, vegetables, grains and any other plant material	Pressure on existing food resources for communities in pipeline vicinity	Avoid biodiversity hotspots Local produce industry must not be negatively impacted.	Where small areas of high biodiversity are encountered during pipeline inspection and maintenance that were not identified in pre-construction studies, they will be mapped and flagged as no-go areas The harvesting or collection of fruits, vegetables, grains and other plant material by CNOOC employees or the Contractor for use or sale is not allowed.	Operation/maintenance contractor CNOOC OMM /QHSE Environmental Coordinator	■ Records of ECO training to identify hotspots; ■ Records of ECO accompanying surveyors and dozer operators during bush clearing; AND ■ Records of biodiversity hotspots and avoidance measures taken. ■ Inclusion of prohibition in training/ induction programme(s) and contractor tool box talks; ■ Absence of evidence of plant harvesting by employees; and ■ Evidence of disciplinary procedures in the event of non-compliance.	During surveying or bush clearing bi annually	
2.	Hunting or harassing wild animals – including fishing	Pressure on existing wild fauna resources for communities in pipeline vicinity	Local meat industry must not be negatively impacted	Hunting, harassing, or capturing of wild animals for sale as pets is not allowed. The purchase of wild animals for food by CNOOC employees and Contactors is not allowed. An education programme will be implemented with appropriate awareness communication to the personnel.	Operation/maintenance contractor Environmental Coordinator CNOOC OMM /QHSE	■ Inclusion of prohibition in training/ induction programme(s) and contractor tool box talks; and ■ Absence of evidence of hunting or animal harassment by employees.	Annually	
3.	Changes to approved travel routes	Potential for environmental disturbance outside of known project corridor	Minimise bush clearing	If the operation/maintenance contractor wishes to change from an approved route, CNOOC shall be notified in advance. The notification shall include a motivation for the proposed route change. No changes shall be agreed to that, in the opinion of CNOOC, result in an unacceptable environmental impact. Any change shall be certified by the EC.	Operation/maintenance contractor CNOOC OMM/QHSE Environmental Coordinator	■ Record of notification and any approval(s).	Annually	
4.	Heat radiating from buried pipeline drying out soils within vicinity	Colonization of areas in pipeline corridor by alien vegetation	Minimise alien vegetation infestation	CNOOC shall prepare a booklet of alien plants, annotated with photographs, as a basis for identification and control by the Operation/maintenance contractor. The list of alien plants in Table 6-4 shall serve as a basis for alien plant control, to be updated from time to time, as necessary. The booklet shall be available on site at CNOOC's and Operation/maintenance contractors' site offices and shall be provided to the ECO/ESOs. If alien vegetation establishes during the operation phase, or during the Operation/maintenance contractor's warranty period, it shall be selectively removed. Table 6-4 provides guidance about removal strategies of the listed alien plants. Alien species monitoring and control shall be handed over to the SPT monitoring team after the Operation/maintenance contractor has demobilised.	Environmental Coordinator Operation/maintenance contractor Environmental Coordinator CNOOC OMM	■ As per requirement. ■ Records of alien plant removal in accordance with Table 6-4. ■ Record of handover.	End of Operation/ maintenance contractor warranty period	

Ref.	Aspect / Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
5.	Heat radiating from buried pipeline drying out soils within vicinity	Change in type of vegetation community	Minimise the loss of vegetation communities	■ Implement a nursery program to propagate and grow suitable plants on open areas within the project site to maintain diversity and improve the project area.	CNOOC OMM/QHSE	Presence of tree nursery with native species Re-planted native trees with project corridor	Annually	
6.	Heat radiation from pipeline along Escarpment corridor	Impact on vegetation community in the Escarpment Corridor	Minimise the impact of the project on the escarpment corridor	■ Verify the likely risk of heat transfer to the surface and ensure that the pipeline is sufficiently well insulated and buried deep enough to minimise heat increases at the surface; ■ Include drought-tolerant species in the seed mix of the steep sections of the pipeline trench which are actively seeded after construction; and ■ Monitor plant recovery over the pipeline trench where growth could be affected by the increased temperature of the soil. If necessary. Make provision for irrigation on the steep slopes on a semi-permanent basis.	Operation/maintenance contractor	■ Seed mix composition; and ■ Plant recover records.	Annually	
7.	Pipeline sections buried across wetland/drainage sections	interference with Wetlands and Drainage flow Lines	Minimise the impact of the project on wetlands and drainage lines	■ Verify that the design depth of the pipeline is sufficient to minimise the interruption of sub-surface flows of water in the wetlands and drainage lines that are crossed.	CNOOC OMM/QHSE	■ Pipeline design; and ■ Visual observations for interruption of water flow.	Annually	

Table 6-4: Alien invasive plants identified in the CNOOC license areas and recommended control methods

Scientific Name	Common Name	Control Method/Recommendations
Agave sisalana	Sisal hemp	Cut of the central growth stem as low as possible and apply herbicide solution immediately after cutting (within 20 s).
Argemone mexicana	Mexican prickly poppy	Hand weeding carried out before the plant has set seed.
Azolla pinnata	Mosquito fern	Manual removal by using thin-meshed nets. This is the preferred methodology when the invaded areas are relatively small. All material should be removed from the location, as this plant reproduces vegetatively through fragments of stems that root easily
Caesalpinia decapetala	Shoo fly	Seedlings and saplings can be dug up or pulled up manually. Larger plants must be cut and stumps treated with herbicide.
Cereus jamacaru	Queen of the night	Single, isolated seedlings shall be uprooted and disposed of. Care must be taken that no part of the plant is left lying where it can root. Under no circumstances must pieces of the plant simply be carted away to be discarded, since this is one of the most common ways in which cactus infestations spread.
Datura stramonium	Devil's snare	Isolated plants should be hand-pulled before they set seed. Larger infestations can be controlled by tillage when weeds are in the seedling stage. For larger plants it may be necessary to spray with a herbicide such as Roundup, limiting as much as possible its application to the target species.
Opuntia ficus-indica	Prickly pear	Manual/mechanical pulling preceded (or not) by the stem cut (preferred methodology). In compacted substrates, uprooting must be during the rainy season so as to facilitate the removal of the root system. No fruits, large roots and cladode fragments should be left in the ground, which root easily and spread new invasion. All pulled material should be removed from the location and burned.
Parthenium hysterophorus	Whitetop weed	The plants should be pulled out before they flower, making sure that all of the root system is removed to avoid regrowth from root remnants.
Pistia stratiotes	Water lettuce	Small scale infestations can be controlled manually. Larger infestations have been tackled using herbicide. Reapplication is likely to be necessary over time.
Ricinus communis	Castor oil bush	The plant can be controlled through ploughing and mowing or physical uprooting. Herbicides can be effective as cut stump treatments or basal bark applications (painting herbicide onto the bark).
Senna occidentalis	Coffee weed	The plant can be successfully controlled when in the seedling stage by ploughing. Likewise, a variety of herbicides can successfully control the species.
Xanthium strumarium	Rough cocklebur	Single plants and small infestations can be hoed and larger infestations sprayed with herbicide. Control efforts should be aimed at preventing seed formation.

6.6 Water Management Plan

The water management plan for the operational phase of the Feeder pipeline focuses primarily on storm water and associated risk of erosion and sediment movement. The management of the feeder pipeline construction camp is addressed within the construction EMP, through to such time that the construction camp has been decommissioned and removed. Consequently, the operational EMP makes no allowance for management of a man camp associated with the feeder pipeline.

Table 6-5: Waste water

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	On-site sanitation	Contamination of soil and water	Avoid contamination of community land	Should maintenance work be required, CNOOC to provide maintenance workers with portable chemical toilet facilities so that no members of the maintenance workforce relieve themselves in or adjacent to community gardens.	CNOOC OMM/QHSE	■ Absence of community complaints.	Annually	
2.	Operation and maintenance of the pipeline	Accelerated erosion Impact on surface and groundwater	Minimise erosion Ensure Legal compliance	Accelerated erosion during storm events shall be minimised during all stages of Operation/maintenance. Should this be unavoidable, specific erosion control measures shall be implemented for the duration of the storms (e.g. packing of sandbags to control storm drainage, diversion berms, temporary culverts etc.) in order to minimise erosion: Specific measures include; ■ ECO to inspect servitude to ensure no signs of erosion. Particular attention to be paid to steep slopes and pipeline exit up escarpment; ■ Inspection to include visual inspection of all storm water diversion structures taking particular account of where storm water is being discharged to in order to ensure that no inadvertent damage to adjacent community properties is occurring; and ■ Inspection to specifically include walk down of receiving drainage lines in all low points. Drainage line inspection to commence 50 m above pipeline crossing of drainage line and continue for 200 m below crossing point. Specific points of note are signs of enhanced erosion through accelerated water volumes and/or signs of sedimentation and siltation of the watercourse below the point of pipeline interception. Should CNOOC, or any of their appointed contractors, require making use of either surface water or groundwater resources during the operational and maintenance period, CNOOC is to ensure that all necessary permits for the use of surface water and groundwater have been obtained by the staff and/or the relevant contractor.	Operation/maintenance contractor CNOOC OMM/QHSE	■ Minimised alteration of natural flows; ■ Details of measures implemented to control storm water; ■ Absence of material erosion on site; ■ Absence of signs of instream or wetland sedimentation; and ■ Absence of community complaints regarding storm water discharges. ■ Compliance with relevant Permits. ■ Monitoring records for quantities of water abstracted.	Quarterly monitoring with Annual audits	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
3.	Pipeline maintenance activities	Localised pollution from spills at valve stations, during pigging and in the case of pipe dig ups to repair damaged pipe or suspect welds	Minimize impacts on water, from pipeline	■ Undertake a pre-assessment of any possible spillage risks prior to any maintenance work being done and evaluate the potential impacts in the context of the sensitivity of the immediately surrounding environment; ■ Where maintenance activities take place near or within drainage lines or seasonal wetlands, or close to community water supplies, ensure that the necessary management measures are identified in the work authorization and are appropriately catered for; ■ Ensure that all maintenance is undertaken along the pipeline with appropriate spill management equipment readily available on site; ■ Train all maintenance teams about the consequences of oil spillages into the natural environment and the importance of due diligence when undertaking pipeline maintenance; and ■ In the event that Naturally Occurring Radioactive Waste (NORM) is encountered during pigging, follow recognised protocols for its management and disposal (such as OGP, 2008, Guidelines for the Management of Naturally Occurring Radioactive Material in the Oil and Gas Industry)	CNOOC OMM	■ Record of pre-assessment for spillage risk ■ Record of work authorization held by pipe maintenance crew ■ Presence of spill management equipment ■ Records of training for maintenance teams regarding oil spillages ■ Record of handling for naturally occurring radioactive waste	Quarterly	

6.7 Traffic Management

The traffic management plan for the Operation/maintenance of the Feeder outlines journey management of project related vehicles. Such trips will largely be confined to inspections utilising light vehicles and, where necessary, heavier vehicles used for purposes of maintenance.

Ref.	Aspect / Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Site access for purposes of maintenance	Traffic hazard risk for community members along access route Road traffic incidents or accidents	Community safety Avoid creating new roads Minimise public disturbance	The Operation/maintenance contractor shall submit a Traffic Access and Safety Plan to CNOOC for approval, prior to site establishment, defining the transport routes to be used to and from the Operation/maintenance work areas, and measures that will be taken to ensure community safety during inspection and maintenance. ■ Drivers to adhere to CNOOC driving policy – land transport requirements, which include speed limits that reflect the specific type of road, driver behaviour and training. ■ All off-road driving prohibited without prior approval from CNOOC; and ■ Use of road marshals to control traffic at designated points such as animals and people crossing, corners and black spot areas. Safe travelling speeds for each section of the route along the right of way shall be determined and enforced. Enforcement may include, but not be limited to, the monitoring of vehicle speeds, the erection of speed limit signs and the installation of speed humps. All vehicle operators shall have received defensive driver training, aimed at promoting improved driver safety performance CNOOC shall conduct an ongoing traffic safety awareness campaign during the Operation/maintenance period, particularly in communities where Operation/maintenance vehicles will be most active. The awareness training shall be repeated in villages as Operation/maintenance moves into their areas. In the event of an accident attributable to CNOOC or their contractors in which a community member is harmed, CNOOC (or the Operation/maintenance contractor) shall take responsibility for transporting the injured person to an appropriate health facility capable of dealing with the injuries. With the exception of emergencies, hooting must be prohibited to avoid unnecessary noise. Vehicles must not be allowed to idle to avoid unnecessary noise and air pollution. Transported goods must be securely stowed and covered so that materials cannot fall/ fly off, causing injuries or pollution.	Operation/maintenance contractor CNOOC OMM/QHSE CLO LOCSA	■ Plan submitted and approved; and ■ Records of accidents and corrective actions taken. ■ Limited new access road development. ■ Written authorisation from CNOOC where access roads necessary. ■ Speed testing, speed limit signage; ■ Absence of community complaints; and ■ Accident records. ■ Records of defensive driver training; and ■ Accident records and trends. ■ Records of traffic awareness campaigns. ■ Number of near misses; and ■ Number and nature of accidents involving community members (minor to serious). ■ Complaints registered by communities or employees in the Complaints Register; and ■ Itemised inventory registers showing that nothing has been lost from vehicle.	Monthly monitoring with annual audit reporting	

6.8 Community health, safety and security

The community health, safety and security management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-6 to Table 6-8. Traffic in relation to the community health, safety and security is outlined above in Table 6-5.

Table 6-6: Nuisance

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Frequency	Additional Reference
1.	Interaction between project workforce and communities Project traffic in community access routes	Spread of diseases due to project personnel behaviour Risk of traffic hazards Creating noise or dust nuisance on community roads		■ Continue to implement CNOOC's drug and alcohol policy, which prohibits the use of these substances at all of its camps and those of its contractors. In accordance with this policy, vehicles and bags are routinely searched to ensure that unauthorised substances are not taken into the camps facilities. Employees who transgress these rules are disciplined and face possible dismissal; ■ Ensure that the CNOOC Driver Safety Programme is implemented consistently; ■ Ensure that the EPC and drilling contractors make sufficient provision for active recreation at the camps. Ugandan Nationals have a great football tradition and a football field could be considered, among other recreational facilities. Sufficient recreation directly combats the lure of substance abuse and should be seen as a necessary component of the camps to maintain a stable and productive workforce; ■ Conduct health education programmes for employees designed to disseminate information about social pathologies and the spread of disease; ■ Ensure that the CNOOC Emergency Response and Exposure Control Plans are understood by all workers, including labourers undertaking routine maintenance functions along the length of the pipeline, and not only by first responders, and that adherence is strictly enforced under all circumstances and conditions; ■ Communicate regularly with stakeholders about the pipeline as a means of reducing local unease of risks associated with the transport of oil and, in particular, in relation to the avoidance of cultivation or other activities (other than grazing of stock) on the 10 m wide right of way. It is a critical requirement that CNOOC builds trust with its stakeholders in respect of the continuing safe operation of the pipeline; ■ Ensure that communities and adjacent landowners are informed in advance of any major maintenance activities that are required along the pipeline route; ■ Ensure that maintenance staff wear CNOOC-branded safety vests and use CNOOC branded vehicles to provide land owners with an immediate means of distinguishing them from intruders; ■ Ensure that community forums are created in which landowners can raise issues and discuss with CNOOC staff any ongoing concerns about safety associated with the pipeline in general or about crime related to the use of the pipeline corridor for access; ■ Provide all stakeholders with contact details of maintenance and emergency staff at the production facility and ensure that this information remains updated. Local inhabitants will be CNOOCs eyes and ears in this regard and can be of assistance in day to day monitoring of any events that should	CNOOC OMM/CA Operational contractor	■ Drug and alcohol policy; and ■ Disciplinary procedures.	Ongoing – as needed	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Frequency	Additional Reference
				be noted or acted upon in relation to pipeline safety and maintenance. Exposure of the pipeline due to erosion or illegal excavation along the pipeline route would be two such events; ■ Maintain the grass in the pipeline servitude by slashing or mowing and not by burning to minimise risks to surrounding land owners; ■ Ensure ongoing circulation of contact details of community liaison officers or, if separate, of 'grievance officers' or other key contacts; and ■ Maintain the grievance procedure developed during the exploration phase in accordance with IFC requirements and including the following: ▪ Circulation of details of the Witness NGO as well as the mechanisms to access the NGO; ▪ Maintaining awareness amongst the local community regarding the grievance procedure and how it works; and ▪ Maintenance of a grievance register that is continuously updated by CNOOC. ■ Provision of a mechanism to provide feedback to individuals and groups.				
2.	Operation/maintenance activities	Nuisance due to noise from operation/maintenance activities at night	Minimize nuisance from operation activities to communities in proximity to pipeline corridor	No maintenance other than that required to deal with an emergency, such as a rupture of the pipeline, shall take place outside of daytime hours without the written permission of CNOOC, after due consideration of the potential of the activity to create nuisance. The CLO(s) and ESO shall communicate regularly with households and other receivers living close to Operation/maintenance activities where noise and dust are potentially affecting them. Most people are tolerant of short term nuisance when treated courteously and when efforts are made to minimise their issues of concern. Formal monitoring equipment to be determined by EC based on circumstances on site.	Operation/maintenance contractor CLO CNOOC OMM/QHSE EC	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; ■ Records of observations in ESO/CLO monthly reports; and ■ (Need for use of formal monitoring equipment to be determined by CLOs and ESO, based on circumstances on site).	As required. Formal monitoring as specified by CNOOC	

Table 6-7: Population Influx and Social Pathologies

Ref.	Aspect/Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Frequency	Additional Reference
1.	Employment on the project	Impact of attracting job seeking migrants to the front gates of the various project work areas and into sensitive communities	Develop and implement an overarching communication strategy to handle all CNOOC strategies in employment process	A Communication Plan shall be prepared including national coverage and community communication campaigns, starting prior to establishment on site, and communicating the following CNOOC policies: ■ No hiring of job seekers on site; ■ No procurement at the gate; ■ Employment selection in agreement with agreed procedures by the Community Liaison Forum; and ■ Maximising local content in procurement (i.e. from local people and towns, whenever possible).	Public Affairs Coordinator LOCSA	■ Inclusion of recruitment issues in the Communication Plan.	Pre-Operation/ maintenance	

2.	Pipeline operation activities	Impacts from population influx	Awareness raising on impacts from Influx to the project area	Information meetings shall be held with Government and in all affected villages, explaining the negative impacts of population influx, the company's recruitment policy and verification process for appointing only local people for unskilled work, and harnessing their support to reduce influx of work and opportunity seekers.	Public Affairs Coordinator LOCSA	■ Communication in accordance with requirements of Communication Plan and Communication Method Statement; and ■ Records of meetings.	Pre-Operation/maintenance and ongoing	
3.	Appointment of local personnel	Discontent in communities over employment on the project	Maximise the employment of Ugandans in temporary unskilled and semi-skilled positions during the pipeline construction phase	All unskilled employment shall be from local project-affected villages, if sufficient numbers of applicants are available who comply with project requirements for unskilled workers. Recruitment of unskilled labour shall be in accordance with the agreed procedures of the Community Liaison Forum (CLF), a part of whose mandate is to provide CNOOC with unskilled personnel based on a fair and transparent selection process. Records shall be kept of the number of communication initiatives nationally, in the Province and District and in the nearest communities. Updated records shall also be kept of the number of Operation/ maintenance jobs awarded to people verified as 'local' from the communities, as well as from the District, Province and Nationally. Survey results shall be maintained from interviews with village leaders about increases in numbers of new arrivals.	Operation/maintenance contractor LOCSA CNOOC OMM/CA	■ All unskilled employment requests channelled through the CLF; ■ Employment as per the procedure agreed by the CLF; and ■ Number of employment selection issues registered in the Complaints Register. ■ Records of meetings; ■ Records of Operation/maintenance employment to local people; and ■ Surveys of interviews with village community leaders about in-migration	Annually	

Table 6-8: Communicable Diseases

Ref.	Aspect	Potential Impacts	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Presence of project personnel in community areas close to pipeline	Spread of communicable/ sexually transmitted diseases	Management of sexually transmitted infections (STIs)	The Operation/maintenance contractor shall prepare and implement an STI Management Plan designed to minimise the spread of HIV infection and other STIs. The plan shall be prepared with the assistance of a specialist in sexually transmitted diseases. A typical plan would include, among other things, the following measures: ■ An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STIs, to employees, through workshops, posters and informal information sessions; ■ Encouragement of employees to determine their HIV status; ■ Supply of condoms at the Operation/maintenance site(s); and ■ Development of a comprehensive Operation/maintenance Camp Management Plan, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site. The plan shall be submitted to and approved by CNOOC prior to implementation.	OMM/QHSE Public Affairs Coordinator	■ CNOOC-approved STI Management Plan; and ■ Number and nature of initiatives in communities as per the Plan requirements.	Annually	
2.	Pipeline maintenance activities	Presence of stagnant pools in pipeline corridor, leading to persistence of disease carrying vectors	Mosquito vector control, avoidance, diagnosis and treatment	The Operation/maintenance contractor shall prepare and implement a malaria management plan and include vector control, avoidance, diagnosis, treatment, and training. The plan shall be submitted to and approved by CNOOC prior to implementation	OMM/QHSE Public Affairs Coordinator Environmental Coordinator	■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; and ■ Records of ongoing training of employees in respect of malaria avoidance.	Annually	

6.9 Waste management plan

The waste management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-9. The plan includes the management of hazardous materials, including handling and disposal.

Table 6-9: Waste management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Non-hazardous waste Generation	Potential for environmental contamination from waste areas	Minimize waste generation at all work sites.	All non-hazardous waste shall be collected, separated for recycling, temporarily stored, transported and disposed of in accordance with the Law and the specification set out in the CNOOC Waste Management Plan: ■ Principles of reduce, reuse and recycle must be implemented where practical. All hazardous waste shall be collected, classified, labelled, temporarily stored, transported and disposed of in accordance with Ugandan Law, and as set out in the CNOOC Waste Management Plan.	Contractor OMM/QHSE	■ As per requirement; ■ Records of waste collected and recycling; and ■ Manifests of waste collection and disposal at selected municipal waste disposal site.	Annually	

6.10 Cultural heritage

The Cultural heritage management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-10.

Table 6-10: Cultural heritage management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Schedule	Additional Reference
1.	Pipeline operation/ maintenance activities	Potential for damage to cultural heritage sites	Identification of all cultural heritage sites Awareness of all cultural heritage site Avoidance of known cultural heritage sites near the Operation/maintenance works Updating of cultural heritage site data base Collection of cultural heritage remains Preserve cultural heritage Preservation of all cultural heritage remains Maintain community access to cultural heritage sites	Cultural heritage sites shall be updated, based on the investigation associated with each activity, and any sites within 500 m of Operation/maintenance activities shall be included in FP O-ESMP. Heritage sites shall be georeferenced for easy identification in the field. Where project infrastructure is within 100 m of a cultural heritage site, the area shall be flagged for special attention. In such cases, the precise location of the site shall be confirmed with members of the local community. All Operation/maintenance team personnel, particularly operators of vehicles and heavy equipment, shall be made aware of the site and advised of its importance. If considered necessary by CNOOC, in consultation with local community representatives, the site shall be temporarily fenced or demarcated in order to protect it from damage. The Contractor shall respect local intangible cultural heritage, tradition and taboo during Operation/maintenance so as to ensure that the negative socio-cultural effects are effectively managed. The collection of archaeological or other cultural artefacts found on site by contractor personnel shall be prohibited. Community access to sacred sites shall, where necessary, be maintained during the Operation/maintenance period. Access requirements shall be determined by the CLO in consultation with local communities. The Contractor shall minimise the risk of accidental damage to heritage sites by implementing the Chance Find Procedure (CFP) developed by CNOOC. The Environmental Coordinator (EC) and ESO/ECO shall undertake training provided by a qualified specialist in order to improve their capability to identify archaeological and paleontological finds. In the event of a Chance Find for which the EC determines a professional archaeologist's opinion is required, no further Operation/maintenance work shall be undertaken until the archaeologist has seen the site and made a recommendation.	OMM/QHSE/CA CNOOC	■ Inclusion of updated and geo-referenced cultural heritage site listings in the FP O-ESMP. ■ Absence of damage to any cultural heritage site; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Inclusion of cultural heritage sensitisation in induction programme(s) and contractor tool box talks; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Records of communication with communities; ■ Maintenance of access, as agreed; and ■ Absence of complaints from members of the community in the Compliments and Complaints Register. ■ Records of training of site personnel; and ■ Compliance with CFP.	Annually	

6.11 Labour working condition and employment management plan

The labour working condition and employment management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-11.

Table 6-11: Labour working condition and employment management plan

Ref.	Aspect	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
1.	Project Labour Force Management Plan (LFMP)	Establish a LFMP in communication with relevant stakeholders	CNOOC (and not the Operation/maintenance contractor) is to establish a Project Labour Force Management Plan (LFMP) with the National Department of Labour, which shall include the process of recruitment of local labour. The LFMP shall be negotiated with the relevant labour union in consultation with Local and District authorities and with leaders of the affected communities.	CNOOC Local Procurement Officer OMM/QHSE/CA	■ Signed Project Labour Agreement; and ■ Records of disputes.	In advance of the Operation/maintenance contract	
2.	Implementation of the LFMP	Compliance with LFMP and Ugandan labour law	Employment shall be undertaken and managed by the Operation/maintenance contractor according to Ugandan labour law and the approved Project Labour Agreement (provided to the Operation/maintenance contractor by CNOOC). In particular the following should be addressed in the LFMP and implemented by the Operation/maintenance contractor: ■ The maximum use of local labour during Operation/maintenance on activities where Operation/maintenance machinery could be dispensed of. Where enhanced labour use is practical, it shall be complimented by applicable skills training; ■ All unskilled temporary Operation/maintenance jobs should be for the project-affected communities, subject to availability of sufficient workers from these communities who qualify with project requirements for employment; and ■ Recruitment methods for the project shall be agreed with the local authority and community leaders (represented in the CNOOC Community Liaison Forum but shall under no circumstances be *ad hoc* recruitment at the Operation/maintenance sites or personnel camps. No fees shall be levied for recruitment or preferred status for employment opportunities.	OMM/QHSE/CACNOOC Local Procurement Officer	■ Signed Project Labour Agreement; ■ Maximisation of labour use, where practical; ■ Records of CLF, showing unskilled employment from project-affected communities; and ■ Absence of justifiable complaints in the Compliments and Complaints Register.	Pre-Operation/ maintenance and ongoing	
3.	Jobs for unskilled workers	Fair distribution of jobs for unskilled workers	Selection for unskilled employment shall further be based on the procedures developed and agreed by the Community Liaison Forum (CLF), which is intended as a mechanism for identifying and selecting unskilled workers from local communities in a fair and transparent manner.	OMM/QHSE/CA	■ Compliance with LFMP; and ■ Records from Community Liaison Forum.	Ongoing	
4.	Requirements for employment opportunities	Communication of requirements for employment opportunities	In order to maintain a transparent labour recruitment process, the information concerning procedures and eligibility requirements shall be communicated through channels used by local authorities and grass roots community organisations. Details of communication channels shall be included in the Communications Plan.	CNOOC Local Procurement Officer CNOOC Public Affairs Coordinator	■ Number and nature of communication initiatives; and ■ Records of communication.	Ongoing	
5.	Grievance procedure	Record all grievances	The LFMP shall include a formal Employee Grievance Procedure which provides employees with a mechanism for raising issues with the company without fear of victimisation. Contractors shall ensure that the induction of employees includes instruction on how to use the grievance procedure.	CNOOC Local Procurement Officer OMM/QHSE/CA	■ Grievance Procedure; ■ Induction regarding Grievance Procedure; and ■ Records of grievances and how they were resolved.	Ongoing	
6.	Semi-skilled and skilled employment	Localise employment as far as possible	Where positions are available for semi-skilled and skilled jobs, the Operation/maintenance contractor shall coordinate with local authorities and the education sector to identify appropriate local candidates. The Operation/maintenance contractor shall follow the 'spiral' principle in seeking qualified candidates (i.e. start in local communities, and move outwards to the closest town, province, and finally nationally.	OMM/QHSE/CA	■ Percentage of semi-skilled and skilled employees from local communities, District and Province; and ■ Evidence of use of the 'spiral principle'.	Ongoing.	

Ref.	Aspect	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
7.	Employment of women, and other disadvantaged people	Prioritise previously disadvantaged people	The Operation/maintenance contractor shall weight the award of specific unskilled jobs in favour of women, and other disadvantaged people wherever practical.	CNOOC OMM/QHSE/CA	■ Percentage of women, and other disadvantaged people employed.	Ongoing	
8.	Employee agreements	Alignment of employee agreements with the LFMP	The Contractor shall ensure that agreements with employees (including disciplinary criteria, working conditions, payment of over-time etc.) are in line with the L and are properly understood by all employees.	CNOOC OMM/QHSE/CA	■ Records of employee briefings and induction.	Ongoing	
9.	Temporary nature of employment	Employees must understand contracts	The Contractor shall ensure that contract employees fully understand the temporary nature of their employment contracts	CNOOC OMM/QHSE/CA	■ Employment Contract and records of employee briefings and induction.	Ongoing	
10.	Employee supervision	Adequate supervision	Operation/maintenance contractors shall ensure proper supervision of employees at all times, including after-hours where employees are resident on site.	CNOOC OMM/QHSE/CA	■ Compliance with LFMP and FP O-ESMP requirements.	At all times	

6.12 Pollution prevention and response management plan

The pollution prevention and response management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-12.

Table 6-12: Pollution prevention and response management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Offloading of chemicals, servicing and/or refuelling of equipment and vehicles	Spills from chemicals, oils at servicing areas	Prevent contamination of surface water from equipment and/or vehicle spillages	■ There will be no refuelling and handling of chemicals along the pipeline servitude during the operational and maintenance period, unless under emergency conditions in which case the following will be applicable: ▪ Any soil contamination by chemicals, fuel or oil spills, will be collected for treatment at a pre-determined and dedicated location, or will be treated in situ using bioremediation, in accordance with existing procedures; ▪ Vehicles will be maintained regularly and kept in good working order; ▪ Should it be necessary to temporarily store chemicals or fuels on site, such liquid materials will be stored in an impermeable bunded structure capable of containing 110% of the stored volume of the largest tank; ▪ Chemicals/liquids of different hazard class will not be stored together; ▪ All chemicals/liquid temporary storage areas will be undercover to prevent rainwater contamination within the contained pan; ▪ Any liquid waste resulting from storage and/or handling of chemicals or fuels on site will be returned to the Pad 2 waste facility from where the materials will be appropriately handled, stored and scheduled for disposal at an appropriately licensed site in keeping with the CNOOC waste management plan; and ▪ No vehicle maintenance wilt be carried out on the site, unless under breakdown, which case only	CNOOC OMM/QHSE/CACNOOC	■ Photographs showing appropriate management actions; ■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of waste transfer to Pad 2 waste facility ■ Records of timeous corrective action to resolve issues.	Bi-annually	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
				such work as necessary to return the vehicle to service, or render the vehicle drivable, will be carried out. Any routine maintenance or large-scale overhaul will be done off site in an appropriately controlled workshop environment.				
2.	Discharge of effluent	Contamination of surface waters	Prevent contamination of surface water from effluent	■ Effluent will be treated to acceptable standards prior to discharge.	CNOOC OMM/QHSE	■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues.	Bi-annually	
3.	Pipeline rupture	Pollution of soil and water	Minimise pollution of soil and water	■ Shut off the pumps immediately; ■ Identify the position of the rupture along the length of the pipeline; ■ Isolate the pipeline section where the rupture occurred by closing valves up-gradient of the rupture point; ■ Send a clean-up team with spill kit to the rupture area; ■ Evaluate the extent of pollution, determine appropriate clean-up method (e.g. remove and dispose of contaminated soil or remediate *in situ*) and proceed with remediation; ■ Keep a photographic record; ■ Effect necessary repairs; and ■ Compile required report(s) and submit as required.	CNOOC OMM/QHSE/CA	■ Records demonstrate prompt and effective action; ■ Pollution cleaned up and effects thereof adequately remediated; and ■ Authorities and potentially affected communities satisfied with response time, actions taken and results of clean-up and remediation.	Quarterly monitoring with annual audit reporting	
4.	Leak too small for detection by SCADA system, but reported by local residents or detected by vegetation die-back	Pollution of soil and water and impacts on surrounding vegetation	Minimise pollution of soil and water	■ Send EC to undertake inspection as soon as practicable; ■ Schedule clean-up and repair as soon as practicable; ■ Send a clean-up team with spill kit to the rupture area; ■ Evaluate the extent of pollution, determine appropriate clean-up method (e.g. remove and dispose of contaminated soil or remediate *in situ*), shut down the pumps and proceed with remediation; ■ Keep a photographic record; ■ Effect necessary repairs; and ■ Compile required report(s) and submit as required.	CNOOC OMM/QHSE/CA	■ Records demonstrate timeous and effective action; ■ Pollution cleaned up and effects thereof adequately remediated; and ■ Authorities and potentially affected communities satisfied with response time, actions taken and results of clean-up and remediation.	Quarterly monitoring	
5.	Pipeline maintenance works	Contamination of Surface and Groundwater	Minimize pollution of surface or groundwater	■ Undertake a pre-assessment of any possible spillage risks prior to any maintenance work being done and evaluate the potential impacts in the context of the sensitivity of the immediately surrounding environment; ■ Where maintenance activities take place near or within drainage lines or seasonal wetlands, or close to community water supplies, ensure that the necessary management measures are identified in the work authorization and are appropriately catered for; ■ Ensure that all maintenance is undertaken along the pipeline with appropriate spill management equipment readily available on site;	CNOOC OMM/QHSE/CAES O CLO CNOOC	■ Pre-assessment of spillage risks; and ■ Training records.	Quarterly monitoring	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
				■ Train all maintenance teams about the consequences of oil spillages into the natural environment and the importance of due diligence when undertaking pipeline maintenance; and ■ In the event that Naturally Occurring Radioactive Waste (NORM) is encountered during pigging, follow recognised protocols for its management and disposal (such as *OGP, 2008, Guidelines for the Management of Naturally Occurring Radioactive Material in the Oil and Gas Industry*).				
6.	Chemical and fuel spillage	Contamination of surrounding environment	Adequate response to spills	■ Spill kits to be available on site. All site vehicles to be equipped with spill absorbent product of adequate volume to contain an accidental spill at a maintenance site; ■ Regular inspection of all chemical and diesel storage tanks during the project; ■ Report all spills or chemical contact immediately to supervisor; ■ If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials; ■ Any spill clean-up is to be appropriately contained and disposed of by a contractor appropriately licenced with NEMA; ■ If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure; and ■ Materials used for the remediation of spills must be used according to product specifications and guidance for use.	CNOOC OMM/QHSE/CAES O/CLO	■ Photographs showing appropriate management actions; ■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve issues.	Daily inspection with weekly reports Annual monitoring	

6.13 Emergency management plan

The Emergency management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-13.

Table 6-13: Emergency management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	All project activities likely to produce risks; Maintenance works, hot works, offloading and filling operations, naked fires,	Risks associated with leaks, spillage, fire hazards, hot works, electrical hazards,	Prevent and minimise accidents	Operation/maintenance management system must be implemented and include the following general elements: ■ Define the roles and responsibilities of personnel involved in the management of Operation/maintenance during the pipeline's operational phase; ■ Identify the training needs of such personnel and provide the training identified; ■ The roles, responsibilities, accountability, authority and interrelation of all personnel who manage, perform or verify work, which affects safety, should be defined; ■ Employees and others, for example contractors, present on site, should be involved in the arrangements and their implementation. Particular	CNOOC CNOOC OMM/QHSE/CA	Upkeep and reporting of: ■ Fugitive leaks; ■ Spillages; ■ Ignition sources; ■ Firefighting equipment; ■ Maintenance permit to work; ■ Offloading and filling operations; ■ Flame proof electrical equipment; ■ Filling arm hose integrity; ■ Pipe condition; ■ Relief and blow down devices; ■ Alarm, interlock and trip testing;	Annual monitoring	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
				attention should be paid to contractors to ensure they receive the necessary information and training. They need to be aware of the hazards involved and the roles and responsibilities of key personnel; ■ Adoption and implementation of procedures for systematically identifying hazards arising from Operation/maintenance activities and transport and the assessment of their likelihood and severity; ■ The safety management system should describe how hazard identification and evaluation procedures are applied to all relevant stages of Operation/maintenance; ■ Adoption and implementation of procedures and instructions for safe Operation/maintenance, including transport to and from the site; ■ Management of change - adoption and implementation of procedures for Operation/maintenance modifications; ■ Planning for Operation/maintenance and road transport emergencies by adoption and implementation of procedures to identify foreseeable emergencies; prepare, test and review plans to respond to such emergencies; and provide specific training for all Operation/ maintenance and transport personnel; ■ Monitoring performance by adoption and implementation of procedures for the on-going assessment of compliance with the objectives set by the CNOOC Operation/maintenance and transport accident prevention policy, and the mechanisms for investigation and taking corrective action in the case of non-compliance; and ■ Audit and review of the Operation/maintenance and transport accident prevention measures by adoption and implementation of procedures for periodic systematic assessment and the effectiveness.		■ Filling batch meter calibration and shut off; ■ Tank bund integrity; ■ Water deluge on fuel tanks; ■ Near miss incidents related to the process risks; and ■ Institute a management of change system for modifications.		
2.	All project activities likely to produce risks; Maintenance works, hot works, offloading and filling operations, naked fires,	Risks associated with leaks, spillage, fire hazards, hot works, electrical hazards,	Develop specific preventative and protective measures	**Specific preventative and protective measures should include (but not be limited to):** **i)** *Provision of special services (but not limited to) the following:* security; gas sampling; water levels; soil monitoring/sampling; explosives; atmospheric monitoring; noise measurements; cleaning services; and precautions for work in confined spaces. ii) *Emergency services required*: Fire; medical & first aid; routes for emergency vehicles; Safety showers; eye-wash facilities; breathing and escape sets; Means of escape (ladders etc.); Handling of accidents on site. *iii) Movement, loading and unloading:* Access/egress for people, plant and equipment; parking; Unloading/loading areas; turning circles; routing; barriers; Tankers, lorries; dumper trucks;	CNOOC CNOOC OMM/QHSE/CA	Upkeep and reporting of: ■ Fugitive leaks; ■ Spillages; ■ Ignition sources; ■ Firefighting equipment; ■ Hot work permit; ■ Maintenance permit to work; ■ Offloading and filling operations; ■ Flame proof electrical equipment; ■ Filling arm hose integrity; ■ Pipe condition; ■ Relief and blow down devices; ■ Alarm, interlock and trip testing; ■ Filling batch meter calibration and shut off;	Annual monitoring	

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
				cranes; forklifts; Mobile units (pumps, compressors); and Effects on existing site traffic and adjacent public roads; traffic control. *iv) Working conditions during Operation/maintenance:* Noise (compressors; explosion; drills, etc.); time of day, frequency and intensity. Smoke; dust; vehicle fumes; Climatic effects on Operation/maintenance activities (wind, rain, heat, cold; fog). *v) Waste handling:* Wash water; storm/flood and fire water/foam; Contamination and damage to existing drains and sewers; Spillage's of chemicals, oil, fuel; Means of disposal and licence. Bunds; pits; sumps; drain isolation; dredging; draining. Tenting; fencing; temporary sheeting; scaffolding. *vi) Operation/maintenance work safety:* Excavators; warning signs; What effect on live plant equipment? What precautions? How will it be coordinated/supervised? Any checks or tests needed? Is it a recognised safe practice or one-off? Is timing critical? Is access/egress and boundary security satisfactory? Work at heights or elevations; Confined spaces; Excavations, trenches, underground; Access for erection and installation, vehicles, cranes. *vii) Management and supervision:* Guidance to Operation/maintenance traffic (route plan, signs etc.) Obstruction to normal traffic/emergency vehicles (cranes, contractors' vehicles) Increase in site traffic - implications? Size of vehicles (pipe bridge clearances?) Quality of safety equipment and signs on new plants (support and fixing durable?) Personal safety equipment (attitudes/quality) Standards of work, safety, cleanliness (contractors' vehicles, tools, methods of working). viii) *Coordination and organising:* Permits to work etc. (linking with plants & service groups - encourages co-operation); Training and awareness; Communications (who needs to know, why, when). *ix) Auditing and inspections:* Safe working practices (e.g. scaffold-tags, permits, safety equipment etc.); Knowledge of the contractor (does he understand? does he know?)		■ Tank bund integrity; ■ Water deluge on fuel tanks; ■ Near miss incidents related to the process risks; and ■ Institute a management of change system for modifications ■ Facility personnel must conduct well control drills at regular intervals and key personnel must attend a certified well control school periodically.		

6.14 Influx management plan

The project specific measures recommended in relation to influx are addressed in the influx management plan for the operational phase of the CPF and associated infrastructure. There is no merit in duplicating these measures for the pipeline as this will create unnecessary duplication. The only activity that CNOOC will actively engage in, in relation to the feeder pipeline will be to ensure that the permanent servitude remains free of settlement and community use other than grazing.

6.15 Ecosystem services management plan

The ecosystem services management plan for the Operation/maintenance of the Feeder Pipeline is presented in Table 6-14.

Table 6-14: Ecosystem services management plan

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring Frequency	Additional Reference
1.	Grazing for livestock	Increase in grazing pressure on available pastures	Compensation for loss of grazing	The project must (where feasible) support: ■ Local sustainable food economies (i.e. markets that do not significantly diminish the capacity of a food source to replenish itself). For example, only sustainable, established and locally sourced meat should be purchased, where practical; and ■ Sub-county administration strategies to solve regional farming difficulties such as crop failure due to disease and drought (e.g. introduction of modern farming methods, training farmers in post-harvest techniques, and sensitising farmers about land degradation) as part of the Community Development Plan/ Corporate Social Responsibility initiatives (e.g. CNOOC's Community Development Specification).	CNOOC OMM/QHSE/CA	■ Compliance with community development plan.	Bi-annual	CNOOC Community Development Specification
2.	Hunting for wildlife	Increased pressure on wildlife resources	No wildlife harvesting Control of food sourcing Support for sustainable local industry Promotion of scientific studies and monitoring No wildlife harvesting Awareness of wild food issues Control food sourcing	■ Enforcement of a complete ban on wildlife harvesting (hunting/ trapping/fishing) for all Project personnel; and ■ No personnel and/or contractors allowed beyond footprint of Project. ■ Inclusion of mess facilities for staff to control food provision. The mess facility must be the primary means of food provision and employees must be discouraged from using local external food sources. ■ Supporting local communities in developing sustainable farming, ecotourism or other activities that provide alternative food sources and income. ■ Support scientific studies and monitoring programs aimed at assessing the sustainability of using local resources, as part of Corporate Social Responsibility initiatives. ■ Enforcement of a complete ban on wildlife harvesting (hunting/trapping etc.) for all project personnel; and ■ No personnel and/or contractors allowed beyond footprint of Project. ■ Worker and community education programme focussing on the impacts and risks of bush meat hunting (e.g. disease) to be incorporated into the Community Development Plan. ■ Inclusion of mess facilities for staff to control food provision. The mess facility must be the primary means of food provision and employees must be discouraged from using other food sources (e.g. bush meat).	CNOOC OMM/QHSE/CA	■ No personnel and/or contractors beyond footprint of Project; ■ Complaints registered in grievance procedure; ■ Identification of personnel and/or contractors outside of project footprint; and ■ Identification of personnel and/or contractors that do not use project mess facilities. ■ Complaints registered in grievance procedure; ■ Identification of personnel and/or contractors frequenting external food sources; and ■ Identification of personnel and/or contractors that do not use project mess facilities. ■ Compliance with Livelihood Restoration Plan. ■ CNOOC supported studies and monitoring (documented) by suitably qualified professionals. ■ No personnel and/or contractors beyond footprint of Project; ■ Records (e.g. attendance registers) of implementation of education programme.	Annually	Biodiversity Management Plan Fish Act (Cap 197, 1951) CNOOC KFDA RAP Project 2016 Phase 1 Resettlement Action Plan (2017). Biodiversity Management Plan

6.16 Visual assessment management plan

The pipeline is buried. No particular visual effect is anticipated during the operational phase. No specific management measures are required.

6.17 Soil management plan

The pipeline is buried. One of the high risks associated with transition from the construction and operational period will be the probability that the permanent servitude will not have fully vegetated. Consequently there is erosion risk associated with all areas of exposed soil not yet vegetated at the beginning of the operational period. This will be particularly true for the footprint of the pipeline where material has been returned to the excavation. The soil management plan for the Operation/maintenance of the Feeder Pipeline is presented below and deals with soil erosion and siltation.

Table 6-15: Soil management plan

Ref.	Aspect / Activity	Potential impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
1.	Maintenance Activities	Washout of soil from pipeline trench	Repair damages areas resulting from washout ; Minimise probability of subsequent washouts;	■ Fill washed out section with a mix of sand and finely crushed rock, topped by a layer of topsoil, at least 350 mm thick; ■ The trench must be overfilled so that the top layer has a rounded profile to ensure drainage away from the straight-line route of the trench; ■ The topsoil must be planted with a fast-growing, hardy grass of creeping habit (e.g. *Cynadon dactylon)* that will bind the soil even under conditions of drought and overgrazing; ■ The pipeline route must be inspected after each rainfall event and any signs of erosion within the pipeline route must be repaired immediately to prevent emerging erosion channels from growing in size and depth; ■ Particular care must be given to the section of the pipeline exiting the escarpment, which must specifically be walked to look for early signs of settlement, erosion and rathole development which are indicators that water and fill may be moving within the trench; and ■ A photographic record of trench erosion must be kept.	CNOOC OMM/QHSE/CA	■ Records show timeous and proper repair of trench erosion events; and ■ Trench erosion/washout occurs rarely and only during exceptionally heavy rainfall events	Quarterly, following rainy periods	
2.		Contamination from machinery and vehicles	No soil contamination	■ Vehicles and machinery must be subjected to daily inspections for possible leakages and damages that could cause leakage; ■ Vehicles and machinery must be maintained regularly and kept in good working order; ■ Maintenance tasks must be restricted to designated workshops and must not be conducted on site; ■ Spill kits should be on-hand to deal with immediate oil/fuel spills; ■ Vehicles and equipment must be regularly serviced off site; and ■ Vehicles must remain on designated roads to avoid disturbance beyond the Operation/maintenance footprint.	CNOOC OMM/QHSE/CAES O/EC	■ Appropriate journey management plans; ■ Photographs showing appropriate management actions; ■ Records of observations in ESO/ CLO monthly reports; ■ Complaints recorded in Compliments and Complaints Register; and ■ Records of timeous corrective action to resolve complaints.	Quarterly monitoring	
3.		Contamination of surrounding environment	Prevent contamination during the pipeline maintenance activities	■ Undertake a pre-assessment of any possible spillage risks prior to any maintenance work being done and evaluate the potential impacts in the context of the	CNOOC OMM/QHSE/CAES O/ECO	■ Records of observations in ESO/ CLO monthly reports;	During maintenance activities	

Ref.	Aspect / Activity	Potential impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
				sensitivity of the immediately surrounding environment; ■ Where maintenance activities take place near or within drainage lines or seasonal wetlands, or close to community water supplies, ensure that the necessary management measures are identified in the work authorization and are appropriately catered for; ■ Ensure that all maintenance is undertaken along the pipeline with appropriate spill management equipment readily available on site; ■ Train all maintenance teams about the consequences of oil spillages into the natural environment and the importance of due diligence when undertaking pipeline maintenance; and ■ In the event that Naturally Occurring Radioactive Waste (NORM) is encountered during pigging, follow recognised protocols for its management and disposal (such as OGP, 2008, Guidelines for the Management of Naturally Occurring Radioactive Material in the Oil and Gas Industry). ■ Where hazardous substances are required to be moved, it must be safely contained and transported to minimise the risk of spilling; ■ In the event of a spillage or leakage an emergency response plan and trained personnel must be ready to deal with it; ■ Where seepages and leakages are noted, it must be treated according to an applicable procedure as determined by a plan of action for the specific type of disturbance; ■ A leakage detection/monitoring system should be installed along the feeder pipeline; ■ Adequate waste facilities must be provided and maintained at plant, accommodation and Operation/maintenance facilities; ■ Storage of fuel/fluids and chemicals – should only occur in appropriately bunded are where all spills can be contained; ■ Spill contingency measures and spill kits must be available on site; ■ Any largescale spill clean-up are to be appropriately contained and disposed of by a contractor appropriately registered with NEMA; and ■ Hazardous chemicals (e.g. Fuel, Lube oil and solvents, used fuel storage containers) must be contained in an impermeable bunded structure (of 110% capacity of the stored material) capable of containing 110% of the stored volume of the largest tank.		■ Photographs showing appropriate management actions; and ■ Appropriate journey management plans.		

Ref.	Aspect / Activity	Potential impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Monitoring frequency	Additional Reference
4.		Soil compaction	Prevent/ reduce soil compaction	■ Where possible, remove and place soils when in a dry state and not when moist or wet; ■ Loosening of the soil through ripping prior to the stripping process is recommended in order to break up crusting; and ■ Unnecessary trafficking and movement over the areas targeted for Operation/maintenance must be avoided, especially heavy machinery.	CNOOC OMM/QHSE/CAESO/ECO	■ Records of observations in ESO/ CLO monthly reports; ■ Photographs showing appropriate management actions; and ■ Appropriate journey management plans.	Quarterly monitoring	

6.18 Greenhouse gas management plan

The extent of mechanical equipment in operation in relation to the pipeline during its operational phase relates to vehicles used for purposes of inspection. Pipe pressure and heating is maintained through infrastructure installed at the CPF and covered under the CPF operational plan. Consequently, specific measures in relation to greenhouse gas are confined to those associated with light vehicle transport.

Table 6-16: Greenhouse gas management plan

Ref.	Aspect / Activity	Potential Impact	Objective	Management Action	Responsibility	Indicator/Performance Criteria	Schedule	Additional Reference
1.	Maintenance of vehicles and machinery	Air pollution	Minimise emissions	■ Vehicles and equipment must be designed, maintained, and operated in accordance with Good International Industry Practice (GIIP) and the manufacturer's specifications; and ■ Vehicles and machinery must use low-sulphur fuels or biofuels where practical.	CNOOC OMM/QHSE	■ Complaints registered by communities or employees in the Compliments and Complaints Register; ■ Records of timeous corrective action to resolve complaints; and ■ Records of observations in ESO/ CLO monthly reports.	Annually	
2.	Vehicle movement in access route		Minimise emissions from vehicles	Vehicle to be confined to permanent servitudes and existing roads.	CNOOC OMM/QHSE	■ Appropriate journey management plans; ■ Records of observations in ESO/ CLO monthly reports; and	Annually	
3.	Vehicle idling		Minimise emissions from vehicles	Idling of vehicles must be minimised as far as possible (i.e. drivers must switch engines off when not in use).	CNOOC OMM/QHSE	■ Records of observations in ESO/ CLO monthly reports.	Annually	
4.	Operation of Mobile equipment		Minimise emissions	Where practical: ■ Diesel-fuelled mobile equipment should be replaced with electrical equipment, utilizing solar-powered back-up where possible; ■ Electric motors should be used instead of diesel-fuelled generators; and ■ Low-sulphur fuels or bio-fuels should be used where the use of electrical equipment is not feasible.	CNOOC OMM/QHSE	■ Records of observations in ESO/ CLO monthly reports.	Annually	

6.19 Health management plan

The feeder pipeline is buried. Limited health management measures are consequently applicable. The following measures apply.

Ref.	Aspect	Potential Impact	Objective	Management Action	Responsibility	Indicator / Performance Criteria	Schedule	Additional Reference
1.	Project Induced in-migration	Spread of sexually transmitted diseases	Management of sexually transmitted infections (STIs)	The Operation/maintenance contractor shall prepare and implement an STI Management Plan designed to minimise the spread of HIV infection and other STIs. The plan shall be prepared with the assistance of a specialist in sexually transmitted diseases. A typical plan would include, among other things, the following measures: ■ An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STIs, to employees, through workshops, posters and informal information sessions; ■ Encouragement of employees to determine their HIV status; ■ Supply of condoms at the Operation/maintenance site(s); and ■ Development of a comprehensive Operation/maintenance Camp Management Plan, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site. The plan shall be submitted to and approved by CNOOC prior to implementation.	CNOOC OMM/QHSE/CA	■ CNOOC-approved STI Management Plan; and ■ Number and nature of initiatives in communities as per the Plan requirements.	Annually	
2.	Maintenance activities	Persistence of vector borne diseases	Mosquito vector control, avoidance, diagnosis and treatment	■ The Operation/maintenance contractor shall prepare and implement a malaria management plan and include vector control, avoidance, diagnosis, treatment, and training; and ■ The plan shall be submitted to and approved by CNOOC prior to implementation.	CNOOC OMM/QHSE/CA	■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; and ■ Records of ongoing training of employees in respect of malaria avoidance.	Annually	

6.20 Responsibilities for Managing Cumulative Impacts

The management of cumulative impacts associated with oil industry development in Western Uganda will require the involvement of Government, the oil industry and individual developers. Each party bears different responsibilities in this process. For clarity, key identified cumulative impacts are tabulated below and the broad responsibilities of Government, the oil industry as a collective and CNOOC as an individual developer are described in relation to each identified impact in Table 6-17. This table should be used as a guide in interpreting the responsibilities described in the management plans above should there be any uncertainty. CNOOC is only responsible for baring their part of collective management responsibility where cumulative impacts are applicable. In many instances, Government of Uganda is responsible for the primary management of the cumulative impact and to ensure that associated planning is in place. To the extent agreed with the oil industry, the oil industry has a role to play. Similarly, individual companies, and CNOOC specifically within the zone of influence of the Kingfisher Field Development area, is encouraged to play an active supporting role in the mitigation of cumulative impact as they relate to the proposed urbanisation of the Buhuka Flats, threats to critical biodiversity habitat and species and the multiple impacts identified in relation to growing population pressure in the local area.

Table 6-17: Description of the responsibilities of Government, the Oil Industry and CNOOC for management of cumulative impacts

	Cumulative impact or identified risk	Government Responsibilities	Suggested support to be provided by the Oil Industry	The responsibility of CNOOC in such initiatives
Infrastructure	Capacity of key regional roads to accommodate oil industry traffic volumes	The Government of Uganda is upgrading the P1 road between the Buhuka Flats and Hoima (P1). The ESIA recommends that this road be tarred to limit dust through villages.	Oil industry alignment on regional biodiversity planning and support of regional biodiversity initiatives	CNOOC to engage with Government and pursue a decision on the tarring of the road. Should Government not intend to proceed with tarring of the road, CNOOC to take responsibility for control of dust along this road during the construction period.

	Cumulative impact or identified risk	Government Responsibilities	Suggested support to be provided by the Oil Industry	The responsibility of CNOOC in such initiatives
				The air quality management plan should then be amended to include responsibility for control of dust on the P1 during the construction period, paying particular attention to application of dust suppressants on roads passing through villages.
	The proposed upgrade of R5 Northern Road through Bugoma Forest as an oil road	Government proposal to upgrade R5: recommendation that Government reconsider this decision in light of biodiversity sensitivity of ecosystem, particularly in support of Eastern chimpanzee	Oil industry alignment on regional biodiversity planning and support of regional biodiversity initiatives	CNOOC to indicate clearly to government that this particular road is not required for their proposed operation during either construction or operational period (letter has already been sent to Government). CNOOC to engage with government to encourage a decision not to upgrade this road.
Emergency response capability	Limited emergency response capability within the region	It is Government's responsibility to provide urbanised areas with emergency response services	The oil industry is encouraged to engage with government in the development of an emergency response plan, training program and support for the development of appropriate resources in the local area to respond to pollution and civil emergencies such as residential/urban fires	CNOOC to actively engage with physical development plan and local government to ensure that proposed urbanisation that will result from physical development plan is supported by appropriate emergency's response capability within the local area. The extent of such support to be determined in discussion with government.
Urbanisation	Increased urbanisation due to in migration with associated reduced reliance on traditional lifestyles	It is government's responsibility to pursue and implement the development of villages, towns and associated support infrastructure	Oil industry encouraged to support the development of town planning capacity, to actively participate with government in regional planning to ensure that future urban plans do not impact negatively upon the requirements of the oil industry (encroachment into buffer areas) or result in undue environmental deterioration through unstructured planning and settlement	CNOOC to actively engage with government in relation to the proposed Buhuka flats physical development plan and specifically as it relates the requirements to revise the plan to ensure that the Kingfisher field development area project environmental impacts, as currently assessed, are appropriately considered by government in finalisation of the physical development plan.
Biodiversity	Threat to regionally important biodiversity	It is the responsibility of Government to manage biodiversity resources within the regional area. Specifically, to ensure that there is adequate enforcement and protection provided to such resources and that appropriate plans are in place to monitor change on biodiversity protected areas and biodiversity critical habitats	Industry encouraged to establish a forum to identify areas of importance within areas of project cumulative influence and pursue regional biodiversity plans and support the implementation of such plans. Specifically, a focus on research, long-term management of population health & reproduction and detection of change within both habitat and species	CNOOC to participate actively in the establishment and running of an industry collective aimed at regional biodiversity management and bear their share of costs in support of regional biodiversity initiatives. Specifically, to ensure that regional biodiversity plans cater for the following species of concern: - Grey crowned crane - Eastern Chimpanzee - Nahan's francolin
	Increased pressure on natural resource use	It is the responsibility of government to manage population distribution within the region, access to and limitation on the harvest of natural resources and management and stewardship of forest resources	Industry support for regional biodiversity planning and support for identification and development of appropriate programs to reduce the reliance on traditional materials for construction and biomass burning for purposes of cooking.	CNOOC to actively participate in regional biodiversity planning and bear their share of cost associated with such efforts
	Threat to Lake fish stocks due to over exploitation	It is the responsibility of government to appropriately regulate and control the fishing industry. This includes commercial and subsistence fishing.	Lake fish stocks are not limited to the Kingfisher field development project area only where enhanced road access has exacerbated the over-exploitation of fish stock. The oil industry is encouraged to engage with government to support the development of a Lake Albert fisheries plan, support Government in the implementation of the plan and support the development of an appropriate long-term monitoring program to detect change in key indicator species. The oil industry is also encouraged to consider initiatives to introduce local species aqua-culture to provide additional protein into the local community to alleviate pressure on wild stock; also, to consider the development of aquaculture for purposes of restocking depleted lake populations	CNOOC to actively participate in support of oil industry initiative to support government to manage fish stock and threat on fishing industries. CNOOC to bear their portion of cost in this regard.

	Cumulative impact or identified risk	Government Responsibilities	Suggested support to be provided by the Oil Industry	The responsibility of CNOOC in such initiatives
Food security	In-migration posing a risk to food security	Ugandan local Government Sub-county administration are in process of pursuing strategies aimed at improving agricultural production. The intent is to both solve regional farming problems affecting production such as crop failures due to disease and drought. Interventions may include introduction of modern farming methods, training of farmers in post-harvest techniques, development of accessible market access mechanisms, and sensitising farmers about land degradation.	Provide support to this regional agricultural program particularly centred around the oil development node at Kabaale. Increasing sustainable food production, and improving agricultural capacity and access to markets, will in the long term reduce pressure to convert new areas of natural land to agricultural use and decrease reliance on forest harvested products.	CNOOC to participate actively in the regional agricultural program and co-ordinate the involvement of the oil industry in support of this initiative
In migration: Veterinary	In migration will introduce additional pressure on local government resources to provide Veterinary control with associated risk of a break of Veterinary diseases	It is the responsibility of government to provide a regional Veterinary service to ensure that the risk of outbreak of Veterinary disease is appropriately controlled	The oil industry is encouraged to work with government to develop a regional Veterinary control plan to ensure that in migration associated with the oil industry does not result in outbreak of Veterinary disease, in particular vaccination programs against rabies in domesticated animals and brucellosis in cattle	CNOOC to actively support industry initiatives to develop joint Veterinary control plans with in the region and specifically to support the Government in local Veterinary control plans and vaccination programs targeting the KFDA
In migration: human health	In migration is likely to overtax the already limited regional health facilities under strain from a burgeoning population and refugee influx into the Western Ugandan area.	It is the responsibility of government to provide a regional health service and appropriate preventative medical programs	The oil industry is encouraged to support government in the planning and development of appropriate health control plans for the cumulative regional areas. Specifically, health emergency response plans in the event of communicable disease outbreak (haemorrhagic fevers in particular) and waterborne vector control (malaria and similar)	CNOOC to support local health programs and participate actively in oil industry regional initiatives in support of government health program and preventative medicine programs and emergency response to health incidence

7.0 PERFORMANCE ASSESSMENT, CORRECTIVE ACTION, MANAGEMENT REVIEW AND AUDITING

The assessment of performance and provision for corrective actions has the following aims:

- Confirmation of compliance with the requirements as set out in the FP O-ESMP, i.e. Operation/ maintenance contractor performance measured against the FP O-ESMP;
- Measurement of environmental and social performance (degree of success of the FP O-ESMP specifications in managing social and environmental impacts); and
- Ensuring that any deficiencies in the Contractor's performance or the FP O-ESMP itself are identified and remedied.

Aims will be met by responsible parties and entail:

- Ongoing monitoring/inspections undertaken by full time site staff- ESO(s) and CLO(s) as part of CNOOC's team;
- Senior staff review (CNOOC Environmental Coordinator);
- Review by independent consultants (where considered necessary by the Operations Contractor or CNOOC Environmental Coordinator);
- Auditing by independent consultants; and
- Corrective action by the Operation/maintenance contractor shall ensure that any identified problem areas identified by CNOOC's team are effectively addressed. Specifications for monitoring, review and auditing are provided in the sections below.

7.1 Environmental Monitoring Strategy

A monitoring[2] strategy must be defined to ensure that the effectiveness of mitigation measures can be tracked and corrective action (see Table 7-1) taken as necessary. Monitoring is not only intended to verify the contractor's compliance with the FP O-ESMP but also to assess the effectiveness of environmental management, independently of whether the specifications in the FP O-ESMP have been complied with.

Table 6-1 defines, in broad terms, the monitoring requirements necessary during the Operation/maintenance phase of a project. Monitoring is undertaken by the Operations Contractor's team, with assistance where necessary, from the CNOOC Environmental Coordinator and from Specialist Consultants. Much of the monitoring in this kind of civil Operation/maintenance contract involves the ESO or CLO being present when potentially significant Operation/maintenance activities are taking place, being observant, and checking that the Operation/maintenance contractor is not materially deviating from the requirements set out in the FP O-ESMP.

There are some specific metrics that define performance and are based on actual quantitative measurements (dust and noise are examples), but much of the monitoring is simply careful observation to check that the Operation/maintenance contractor is meeting the obligations set out in the FP O-ESMP. Even in the case of noise and dust, it is not always necessary to measure performance against the quantifiable standards, and this judgement must be made at the time by the ESO and the EC, depending on the circumstances. The performance standards often provide an indirect measure of effectiveness – for example, the monitoring of the Contractor's compliance with local employment requirements and the communication of these requirements widely is an indirect measure of the control of in-migration.

[2] *Monitoring is a process of surveillance, based on specified approaches and schedules, used to detect whether any changes have occurred in the predefined, quantifiable properties of the particular environment under consideration.*

Table 7-1: Monitoring requirements

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility	
Community Nuisance (Dust)	To be based on the location of sensitive receptors in relation to Operation/maintenance activities. ESO/CLO to prioritise locations in which monitoring is required.	Daily observation at key locations where dust is being generated near sensitive receptors. Passive sampling when specified by the ESO/CLO in cases where dust impact is in question either due to visible evidence of public complaint	**Observation:** ESO to monitor and log dust incidents where dust control is ineffective or only partially effective in sensitive areas. Log to include time of day, period over which incident occurs, and apparent severity (low, medium, high). **Community Concerns:** Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO. **Quantitative Monitoring:** Fallout Dust: 600 mg/m^2 (measured over 30 days).	Monthly ESO/CLO progress reports	ESO/CLO	
Air quality	Suitable ambient air quality monitoring network based on the optimisation of the construction phase	Ongoing	■ Fine PM_{10} particulate monitoring via active monitoring methodologies; ■ Monitoring of gaseous trace gas pollutants (i.e. SO_2, NO_2, O_3, etc.) with passive diffusion tubes should be undertaken biannually (twice a year during construction); and ■ Audit and optimise the air quality monitoring network annually audit to ensure that it is maintained in accordance with best practice and is relevant to the key emission sources on the ground. **Quantitative Monitoring**	Monthly air quality monitoring reports	ESO/CLO	Air Quality Manage-ment Plan

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			■ Suspended Particulates (Ugandan daily standard): ≤200 µg/m^3; ■ PM_{10} (IFC daily standard): ≤50 µg/m^3; ■ PM_{10} (IFC annual standard): ≤20 µg/m^3; and ■ Respirable particulate matter (<10 µm) (Ugandan daily standard <100 µg/m^3).		
Community Nuisance (Noise)	To be based on the location of sensitive receptors in relation to Operation/maintenance activities. ESO/CLO to prioritise locations in which monitoring is required	Daily observation at key locations where noise is being generated near sensitive receptors Noise monitoring using an integrating noise meter when specified by the ESO/CLO when there is clear evidence of community nuisance.	**Observation:** ESO to monitor and log noise incidents where noise control is ineffective or only partially effective in sensitive areas. Log to include time of day, period over which incident occurs, and apparent severity (low, medium, high). **Community Concerns:** Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO. **Quantitative Monitoring:** Needs to be in compliance with Ugandan Noise standards for operations. In their absence, the World Health Organization guidelines for daytime and night-time noise should be adopted.	Monthly ESO/CLO progress reports	ESO/CLO
Population influx and social pathologies	Camp sites, work sites	Ongoing watching brief	■ Compliance with LFMP employment requirements; ■ No ad hoc employment at the work sites or camp sites; ■ Adherence to closed camp, alcohol-free camp policy;	Operation/ maintenance contractor Communications Plan ESO/CLO	CLO/ESO Operation/ maintenance contractor

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			■ Evidence of implementation of communicable disease programmes; ■ Compliments and Complaints Register.	progress reports	
Communicable Diseases	Non-specific	Ongoing watching brief	■ CNOOC-approved STI Management Plan; ■ Number and nature of initiatives as per the plan; ■ CNOOC-approved Malaria Management Plan; ■ Record of actions taken in accordance with the Malaria Management Plan; ■ Record of STI and malaria incidents recorded among Contractor staff; and ■ Record of induction training and tool box talks.	STD Management Plan Malaria Management Plan ESO/CLO monthly reports Malaria/STD incidence reports	ESO/CLO Operation/ maintenance contractor
Traffic and Pedestrian Safety	Principally areas where households and Operation/maintenance teams interact	Ongoing watching brief	■ Vehicle accident records; ■ Pedestrian accident records; ■ Near misses; ■ Compliance with speed limits ■ Advanced driver training for Contractor heavy vehicle staff; ■ Community safety references in induction briefings and ongoing toolbox talks; ■ Safety briefings of communities; and ■ Compliments and Complaints Register.	Accident/incident reports ESO/CLO progress reports	ESO/CLO Operation/ maintenance contractor
Water Use Management	■ Community boreholes within	Ongoing	■ Records of groundwater use; ■ License for use of water in terms of 43/2007 and Decree 18/2012;	Record of community borehole	Operation/ maintenance contractor

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
	1 km of project boreholes; and ■ Surface water abstraction sites.		■ Records of monitoring of impact on community water supply when Project supply closer than 1 km to community borehole; ■ Records of corrective action, where necessary; and ■ Record of authorisation of use of surface water.	monitoring Groundwater abstraction report Surface water abstraction report ESO monthly report	ESO
Vehicle and Materials Management	Along pipeline route	Ongoing watching brief	■ Records of inspection and maintenance of vehicles and equipment; ■ Approved method statement for handling of hazardous materials on site; ■ Compliance with requirements of approved method statement; ■ Inventory of hazardous materials and Operations Contractor's Documentation available at specified locations; ■ Documentation confirming PCB and CFC free equipment; ■ Protection of fuel storage and camp generators as per requirement; ■ Availability of spill/drip clean-up materials at specified locations; ■ Availability of sheeting/drip trays in all key vehicles; ■ Incident and corrective action records; ■ Provision of appropriate PPE to employees;	ESO progress reports Logistics Superintendent progress reports SHE advisor progress reports Camp manager progress reports	Operation/ maintenance contractor

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			■ Records of induction training and tool box talks; and ■ Records of bio-remediation.		
Natural Heritage– general and bush clearing	Project footprint and surrounding areas	Ongoing watching brief	■ Induction and toolbox talks about wild animal and plant protection; ■ Record of training of machinery operators to minimise Project footprint; ■ Record of training vehicle operators to remain within the approved Project footprint; ■ Records of dangerous animal removal from work sites and camps; ■ Records of communication with IUCN regarding reptile identification; ■ Absence of evidence of hunting or animal harassment; ■ Absence of evidence of unauthorised vehicle access outsider of the approved Project footprint; ■ Records of ESOs accompanying; and ■ Footprint compliance with FP O-ESMP buffer zones and access restrictions.	ESO progress reports	ESO
Natural Heritage – alien invasive species	Project footprint and surrounds	Ongoing watching brief	■ Records of wash-down of site vehicles and equipment prior to use on site to remove alien weeds; ■ Production of illustrated alien invasive species booklet; ■ Photographic record and GPS locations of alien infestation in Project footprint area; and	Records of vehicle wash-down Records of alien plant identification and removal ESO monthly	ESO

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			■ Records of removal strategy.	report	
Natural Heritage– rehabilitation management	Project footprint	Ongoing watching brief	■ Record of induction and toolbox talks for dozer operators; ■ Record of training of dozer operators regarding topsoil removal; ■ Absence of contamination of topsoil with other material; and ■ Evidence of reinstatement as per rehabilitation requirements of the specification.	Photographic record pre-bush clearing ESO monthly report	ECO/ESO
Cultural Heritage	Project footprint and surrounding area	Ongoing watching brief	■ Records of training of key personnel to identify cultural/archaeological artefacts; ■ Record of communication with communities to verify location of sacred sites when Operation/maintenance is within 100 m of a known cultural heritage site; ■ Compliments and Complaints Register; ■ Compliance with Chance Find Procedure and subsequent recommendations by specialist where artefacts are found.	Specialist Report (if significant artefacts found) ESO/CLO monthly report	ESO/CLO Specialist archaeologist
Employment	Project Area	Ongoing watching brief	■ Signed Labour Force Management Plan (LFMP); ■ Evidence of maximising labour use in preference to machinery, where practical; ■ Compliance with the Community Liaison Forum procedure for selection and vetting of unskilled personnel;	LFMP Records of employment Grievance Procedure CNOOC Local Procurement Officer monthly	Operation/ maintenance contractor CNOOC Local Procurement Officer

Parameters/ Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			■ Compliance with the LFMP; Records of communication initiatives to improve understanding of Project-affected communities about how to apply for a job; ■ Percentage of unskilled workers from Project-affected communities; ■ Evidence of vetting semi-skilled and skilled workers according to the 'spiral' principle; ■ Percentage of women, or otherwise disadvantaged people employed; ■ Provision and briefing of personnel about a grievance procedure; ■ Workers understanding and use of the Grievance Procedure; and ■ Frequency of complaints in the Compliments and Complaints Register rand the Grievance Procedure.	report	
Local Procurement	Project Area	Ongoing watching brief	■ Implementation of CNOOC '*Procedure and Guidelines for the Implementation and Enablement of Preferential Procurement in Uganda";* ■ Local procurement records in compliance with approved Local Content Plan, developed in accordance with the CNOOC procedure; and ■ Local content spend in relation to total spend.	Operation/ maintenance contractor Local Content Plan CNOOC Local Procurement Office monthly report	Operation/ maintenance contractor CNOOC Local Procurement Officer

7.2 Inspections and Reporting

7.2.1 Monthly Reporting

The ESO and CLO shall be full time appointments for all projects that require NEMA authorisation, and shall produce a monthly compliance monitoring report, which covers all aspects of compliance with the specification in this FP O-ESMP. The content of the report shall include, but not be limited to:

- Main site activities during the month;
- Community nuisance (e.g. dust, noise);
- Community health and safety;
- Traffic and pedestrian safety;
- Hazardous waste management;
- Non-hazardous waste management;
- Spills and hazardous product management;
- Wastewater management;
- Cultural heritage;
- Natural heritage;
- Rehabilitation;
- Control of alien invasive plants;
- Erosion and sedimentation;
- Communication with stakeholders;
- Compliments and complaints;
- Trends in performance;
- Corrective actions/Conformance Certificate; and
- The format of the report may be modified with the agreement of the CNOOC Environmental Coordinator and Public Affairs Coordinator.

7.2.2 Corrective and Preventive Action

The need for corrective action shall arise from material deviations from:

- A predetermined baseline or limit (as detected by monitoring); or
- General inspections based on FP O-ESMP requirements.

CNOOC shall establish an incident and non-conformance reporting procedure which shall be implemented prior to the initiation of any works. The procedure shall set out a structure for the proper recording of incidents/non-conformances and shall determine the necessary reporting channels.

Incident recording shall include a brief description of the non-conformance with the contract specification, the date it was first logged, the reason for the non-conformance, the responsible party, the result (consequence), the corrective action taken, and any necessary follow up required. Repeated non-compliances in respect of the same issue shall be highlighted. Corrective actions may include:

- Implementation of a specific action to remedy an identified non-conformance; or

- A recommended change to the targets or objectives set in the FP O-ESMPs[3]. In this case, following discussion and agreement with CNOOC, the proposed change shall be brought about in the FP O-ESMP, which shall be submitted to Government as a part of CNOOC's six monthly reporting cycle.

Should a Government Authority audit find that Operation/maintenance activities are causing unacceptable environmental damage, the Operations Contractor shall immediately consult with CNOOC and agree, in consultation with the Government, the remedial measures to be undertaken.

Such agreed measures shall be implemented as quickly as possible to prevent further damage and to repair any damage that may have occurred.

7.2.3 Environmental Committee Meetings and Reporting

CNOOC must establish an environmental committee that includes as a minimum: the ESO, the EC, a member of the Community Liaison Team, and the Contractor's environmental representative. This committee shall meet every two weeks to review environmental performance, including incidents/non-conformances reported, corrective actions implemented, monitoring results and FP O-ESMP compliance. The meeting must be documented.

7.2.4 Six-Monthly Report

The CNOOC Environmental Coordinator must prepare a report every six months for submission to CNOOC management and NEMA. The report must:

- Summarise environmental and social performance over the 6-month period and examine any trends and corrective actions taken to comply with the FP O-ESMP;
- Evaluate environmental performance by reviewing monitoring results;
- Consider trends over the period as an indication of improving or deteriorating performance;
- Identify any critical areas of performance that requires immediate improvement;
- Evaluate changing circumstances and lessons learned that may need to influence and be reflected in the FP O-ESMP; and
- Set new objectives or specifications in the FP O-ESMP, as appropriate.

7.2.5 Independent Audits

An independent auditor shall prepare the project audits. An audit procedure shall be developed by CNOOC to ensure that audits are sufficiently comprehensive, and comply with the requirements of Mozambican Decree 25/2011, the Regulation on the Environmental Audit Process. The audit procedure shall include:

- Audit approach;
- Scheduling;
- Reporting; and
- Responsibilities.

There shall be two audits, scheduled as follows:

- Post-Operation/maintenance audit report based on a site visit, the review of monthly monitoring reports and discussion with the Contractor's environmental team, CNOOC's environmental team and any other party whose views/ opinions are relevant; and

[3] *Modification to the ESMPs may only be made by the CNOOC Environmental Co-ordinator. If the changes are major or are material changes as defined in CNOOCs license, an independent environmental specialist must verify their applicability and the ESMP must be submitted to NEMA.*

- Final audit report at the end of the Operation/maintenance contract and at the end of the maintenance period (one year post contract sign-off), prior to CNOOC's representative issuing a closure certificate for rehabilitation.

Auditing shall consider monitoring results to assess whether FP O-ESMP objectives and targets have been met, and whether there has been any significant non-conformance with the FP O-ESMP and/ or legal requirements. The audit shall also assess whether EMP implementation has been undertaken according to the planned staffing and administrative arrangements and that respective EMPs are being appropriately updated. The audit shall confirm if any identified corrective action has been undertaken and assess the effectiveness of the action as a basis for recommendations to improve contractor performance and the effectiveness of the FP O-ESMP.

8.0 COMPETENCY, TRAINING AND AWARENESS CREATION

8.1 General Training Requirements

The Contractor shall ensure that training is provided to all employees about CNOOC's commitment to conduct the proposed activities in a manner that is respectful to local people, and which minimises impact on their lands, resources and the natural environment. Training shall take the form of, but not be limited to:

- Induction training;
- Use of educational posters; and
- Daily environmental discussion topics prior to the start of each shift (toolbox talks).

The Contractor shall provide induction training material and key educational posters to the Engineer for approval prior to establishment on site. Ongoing toolbox talks and other educational posters shall be structured to meet specific needs, depending on the activity being undertaken. The Contractor shall maintain an updated list of all training sessions for review at the monthly meetings. For induction training, the material shall include (but not be limited to) the following:

- CNOOC's corporate environmental, health and safety policies and applicable Ugandan environmental regulations;
- Avoidance of activity outside of the approved Operation/maintenance right of way;
- Traffic and pedestrian safety;
- Permitted communication and courteous behaviour in interactions with communities;
- Purchase of food and goods from hawkers;
- Management of STIs and malaria;
- Alcohol and drug policy;
- Minimising nuisance impacts in local communities;
- Minimising impacts on cultural heritage (including Chance Find procedure);
- Minimising impacts on natural heritage (hunting, harassing animals, plant collection, animal collection for sale as pets);
- Dealing with dangerous animals;
- Handling potentially hazardous and polluting substances;
- Use of sanitary facilities on site;
- Dealing with pollution spills;
- Littering;
- Firefighting procedures;
- Procedures for emergency response; and
- Reporting of incidents.

Toolbox talks shall be structured to provide more detail around the specific tasks that are the responsibility of the Operation/maintenance crew. Contractors and CNOOC shall make financial provision for unforeseen potential impacts that may require specific mitigation / management measures.

8.2 Specialist Training Material

CNOOC shall prepare and provide to the Contractor the following field booklets for use by key members of staff and for dissemination to employees, as requested:

- 'Encountering Wild Animals': the booklet shall contain easy to understand, fully illustrated information about wild animals that could be encountered, whether they are dangerous, and the necessary actions to be taken in the event that they are found;
- 'Managing Alien Invasive Plant Species': The booklet is to include all alien plant species listed in the EP O-ESMP, with clear illustrations and recommended methods of eradication; and
- 'Good Relationships with Communities'. The booklet is to provide all personnel with basic rules of courteous communication with community members when encountered in the field.

8.3 Handling of Dangerous Snakes and other Animals

The Contractor is to train selected members of staff in safe methods of handling snakes and other potentially dangerous animals. Sufficient capacity shall be developed to ensure that there is always a trained member of staff on site in the event that a snake needs to be removed from a work site or camp. The necessary snake handling equipment is to be provided to the employees responsible for removing snakes. All animal relocations are to be photographed, logged and reported at the monthly meetings.

In cases where reptiles that are captured could be rare (including snakes, skinks, lizards) they should be photographed and temporarily kept in safe containment until they can be positively identified. Photographs of the animal shall be sent by SMS to Dr Bill Branch at the Natural History Museum in Port Elizabeth (Dr Branch is the author of the IUCN Red Data Book on Reptiles).

9.0 EMERGENCY PREPAREDNESS AND RESPONSE

All emergencies shall be handled according to the existing CNOOC Emergency Plan. CNOOC's Emergency Response Team shall provide immediate response to any significant incident, and the emergency contingency plan will also be integrated with that of the local Municipality, if required.

The Project and Contract manager shall establish and maintain procedures to identify the potential for, and the response to, new accidents and emergency situations in accordance with recognised international standards. The procedure shall also address measures to prevent such situations and to mitigate environmental impacts that may be associated with them.

The emergency procedure(s) shall include the establishment of a network of communication with CNOOC and available emergency services including police, traffic police, local medical and ambulance services, fire departments, community associations, and specialist services that may be available. The emergency plan shall be tested on a regular basis through the use of drills and mock emergencies so as to identify and rectify any shortcomings.

Emergency plan update

When preparing additional measures for dealing with emergencies, the following aspects must be taken into account:

- Details of the method for identifying and accounting for the number of persons on site at all times;
- All employees, contractors and visitors will be made aware of / trained on the contents of the Emergency Plan;
- Allocated responsibilities and specific action details;
- Training of staff to manage emergencies on site;
- Frequency of revision and update of the plan;

- A procedure for activating the emergency plan;
- An Emergency Control Centre (ECC) available on site (the CPF facility will serve this purpose), complete with:
  - Copies of the most recent version of the emergency plan and the most recent version of the site layout and location plans/maps;
  - Diagrams of those service facilities, communications, fire hydrants, safety refuges, building emergency exits and muster points required in an emergency;
  - Relevant equipment for both internal and external communications;
  - A readily available means of recording messages and communications in chronological order; and
  - Sufficient room to accommodate the emergency management personnel.
- Emergency resources including but not limited to:
  - On-site first aid services and facilities must be available;
  - A vehicle, suitable for the transport of casualties, must be available on site at all times;
  - Fixed location firefighting equipment (extinguishers, host reels, etc.) must be distributed and located where necessary, accordingly to a risk analysis and maintained in accordance with manufacturer's instructions;
  - Fire extinguishers must be available in all vehicles and accommodation/administration facilities;
  - A fire water main system, which would include a fire water source, must be available and in good operating condition;
  - All construction personnel must receive basic training in firefighting, first aid and other emergency responses;
  - Regular (quarterly) emergency response drills should be held; and
  - The coordination and approach regarding these resources must be consistent with neighbouring operations.
- An incident command protocol must be drawn up and agreed upon by the local Fire Service to avoid conflict when they arrive on site for large incidents;
- A Mutual Aid cooperation agreement with neighbouring sites should be negotiated. This agreement should address all relevant factors, such as financial contributions by both parties, maintenance of equipment, emergency response plan shared between the two sites, location of emergency response vehicles, training etc.; and
- The table below outlines the various feeder pipeline accidents and response options that should be considered by CNOOC Uganda Limited (CUL) for Tier 1 and 2 events and CNOOC international for Tier 3 events:

Tier	Scenario	Total Spill Volume m^3	Prevention Measures	Response Options
Tier 1	Catastrophic booster station leak with surface spreading above ground	80	■ Pressure Control Safety; ■ Pressure Control ESD for the pumps; and ■ Corrosion allowance and protection.	■ Containment and Recovery; ■ Clean-up and Restoration;

Tier	Scenario	Total Spill Volume m^3	Prevention Measures	Response Options
Tier 1	"Chronic" leak during long period of time (6h) - into CPF	0	■ Pressure Control Safety; ■ Pressure Control; ■ ESD for the pumps; and ■ Corrosion allowance and protection.	Surveillance and monitoring
Tier 3	Catastrophic BVS leak with surface spreading above ground	1,203.62	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet/outlet Process Safety Control ESD system; ■ Concrete Lined Pressure Monitoring; and ■ System.	■ Containment and Recovery; ■ Clean-up and Restoration; ■ Protection (Diversion/ Exclusion or Deflection); ■ Lake Albert/ Shoreline; and ■ In-Situ Burning (possible).
Tier 3	Catastrophic above ground pipeline failure with surface spreading above ground - location: ■ Buhuka Flats (flat unpaved ground, close to lake Albert), into CPF perimeter	28.27m^3, pool 30 m radius	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring; ■ System (PLMS); ■ Inlet/outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; and ■ Clean-up and Restoration.
Tier 3	Catastrophic below ground pipeline with direction subsurface migration - location 2: plateau	1,213.6	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet/outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; ■ Clean-up and Restoration; ■ Protection (Diversion/ Exclusion or Deflection); and ■ In-Situ.
Tier 3	Chronic leak during long period of time (1 month) with direction subsurface migration - location 1 Buhuka flats: permeable soil, shallow aquifer	35.96	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); and ■ Inlet/outlet Process Safety Control ESD system.	■ Containment and Recovery; and ■ Clean-up and Restoration.

Tier	Scenario	Total Spill Volume m^3	Prevention Measures	Response Options
Tier 3	Chronic leak during long period of time (1 month) with direction subsurface migration - location 2: Escarpment	35.96	■ Corrosion Protection (cathodic protection and allowance); ■ Automatic pressure loss detectors; ■ Pipeline Leak Monitoring System (PLMS); ■ Inlet/outlet Process; and ■ Safety Control ESD system.	■ Containment and Recovery; and ■ Clean-up and Restoration.

10.0 DOCUMENT CONTROL

The FP O-ESMP forms the basis for the management of environmental and social impacts on site, during the Operation/maintenance phase. Based on the results of the performance assessment and review process, the FP O-ESMP may be modified as the project progresses. Modifications shall only be permitted by the CNOOC Environmental Co-ordinator (EC), who shall retain a single master copy of the FP O-ESMP on site (hard copy and electronic format). All changes to the FP O-ESMP must be tracked, including details of the change, date of the change and name of the reviewer. The EC shall ensure that any modifications in the FP O-ESMP are communicated, explained to and discussed with all affected parties (the Contractor, CNOOC management and any directly affected party who requests this information), and shall be submitted to and approved by NEMA.

CNOOC shall prepare a document control procedure which the Contractor shall comply with. This procedure shall define:

- Document distribution;
- Document retention;
- Management of FP O-ESMP revisions; and
- The document control procedure shall also apply to the Incident and Non-Conformance Reporting.

APPENDIX A

Environmental, Health and Safety Specifications, and Applicable Design Codes and Standards

1.1 Report Structure and Content

The FFD-ESMP is structured as follows:

- Chapter 2: Outlines the Project in conjunction with obligations and responsibilities;
- Chapter 3: Describes decommissioning principles;
- Chapter 4: Describes general requirements for decommissioning, including the transfer of responsibility for equipment and infrastructure left for community use, recycling and reuse of materials and wastes, contaminated land management and non-recyclable waste, re-contouring, reinstatement and rehabilitation and socio-economic considerations;
- Chapter 5: Considers specific requirements for the closure of the project;
- Chapter 6: Describes closure, post closure monitoring, and reporting;
- Chapter 7: Outlines the management of decommissioning costs and the provision of funds to cover these costs;
- Chapter 8: Refers to ongoing liability for the management of any risks or pollution after decommissioning; and
- Chapter 9: Outlines the control of the FFD-ESMP and procedure for updating the document.

1.2 Key point of contact

The key point of contact for the Kingfisher Field Development is indicated in Table 1-1.

Table 1-1: Details of the developer, CNOOC

Title	**CNOOC Uganda Limited (CNOOC)**
Organisation	CNOOC Uganda Limited (CNOOC)
Postal address	CNOOC Uganda Limited Simba Towers, Plot 22 Acacia Avenue, P.O BOX 7862, Kololo, KAMPALA, UGANDA
Contact Name	Andrew Otuba
Telephone	+256 204 500223
Cellular phone	+256 772 79811
E-mail	Andrew.OTUBA@cnoocuganda.com

2.0 PROJECT DESCRIPTION

This section describes the project area and the nature of the activities covered by the FFD-ESMP. While the FFD-ESMP relates solely to the decommissioning phase of the Feeder Pipeline, there is a separate framework decommissioning plan that relates to the CPF, wells and ancillary infrastructure (CPF FD-ESMP).

This document should be read together with the ESIA summary and construction and operational management plans for the associated infrastructure, in which the infrastructure components themselves are described in greater detail.

2.1 Wells, flowlines, CPF and supporting infrastructure

The wells, flowlines, central processing facility (CPF) and supporting infrastructure are situated on the Buhuka Flats in the Kingfisher Field Development Area (KFDA), on the south-eastern shores of Lake Albert.

The project entails the drilling of wells from four onshore well pads, namely Pad 1, Pad 2, and Pad 3 (where exploration wells have already been drilled) together with Pad 4A (where no drilling has yet taken place). A total of 31 wells are planned to be drilled and commissioned as part of the development, 20 of which will be production wells and 11 to be used as water reinjection wells.

The produced well fluids will be conveyed to the CPF through buried infield flow lines connecting each well pad to the CPF. Well fluids will be separated at the CPF to yield produced water, sand, salts and associated gas (together with small quantities of other material) and crude oil of a quality that will meet the crude oil export standard. At the CPF the associated gas will be utilised for production of power or LPG for local market. Power will serve the requirements of the Kingfisher Field Development Area but in later years is likely to be in excess of project requirements and will be exported to the national grid. No gas flaring is contemplated except in cases of emergency.

Supporting infrastructure associated with the production facility will include in-field access roads and flowlines, a jetty, and a water abstraction station on Lake Albert, a permanent camp, a material yard (or 'supply base'), and a safety check station at the top of the escarpment.

2.2 Feeder Pipeline

From Figure 1 can be seen that a feeder pipeline exits from the CPF and extends to the north running from the CPF storage tanks to a delivery point near Kabaale. While the feeder pipeline is addressed through a separate decommissioning plan it is described very briefly here for context.

The feeder pipeline exits the CPF on the east side, running almost due north to the base of the escarpment, where the alignment turns to the East climbing the escarpment. The average gradient in this section of the route is 1:3 (Vertical: Horizontal), rising from roughly 650 to 1040 mamsl. within a horizontal distance of 740 m. From the point at which the feeder pipeline crests the escarpment, the pipeline route runs to the north-east through gently undulating terrain that is extensively cultivated. This landscape includes a number of rural settlements. The route passes south-east of Hohwa and Kaseeta villages and passes immediately north of the planned Kabaale Airport, turning eastward to the terminal point at the proposed Kabaale Refinery. The total length of the pipeline is approximately 46 km.

At Kabaale, the Government of Uganda is planning an industrial park which, among other facilities, will include a refinery, associated petrochemical processing plants, an international airport and related supporting infrastructure.

At the delivery point, there will be metering of the crude oil, which will be piped either to the industrial park to feed the refinery and associated petrochemical industry or exported through the East African Crude Oil Pipeline (EACOP), planned from Kabaale to the Tanga sea port in Tanzania. The EACOP will be a public - private partnership between the governments of Uganda, Tanzania and oil company(s).

The Feeder Pipeline ends at the delivery point in Kabaale. The industrial park and the EACOP are independent projects that do not feature further in the FD-ESMP.

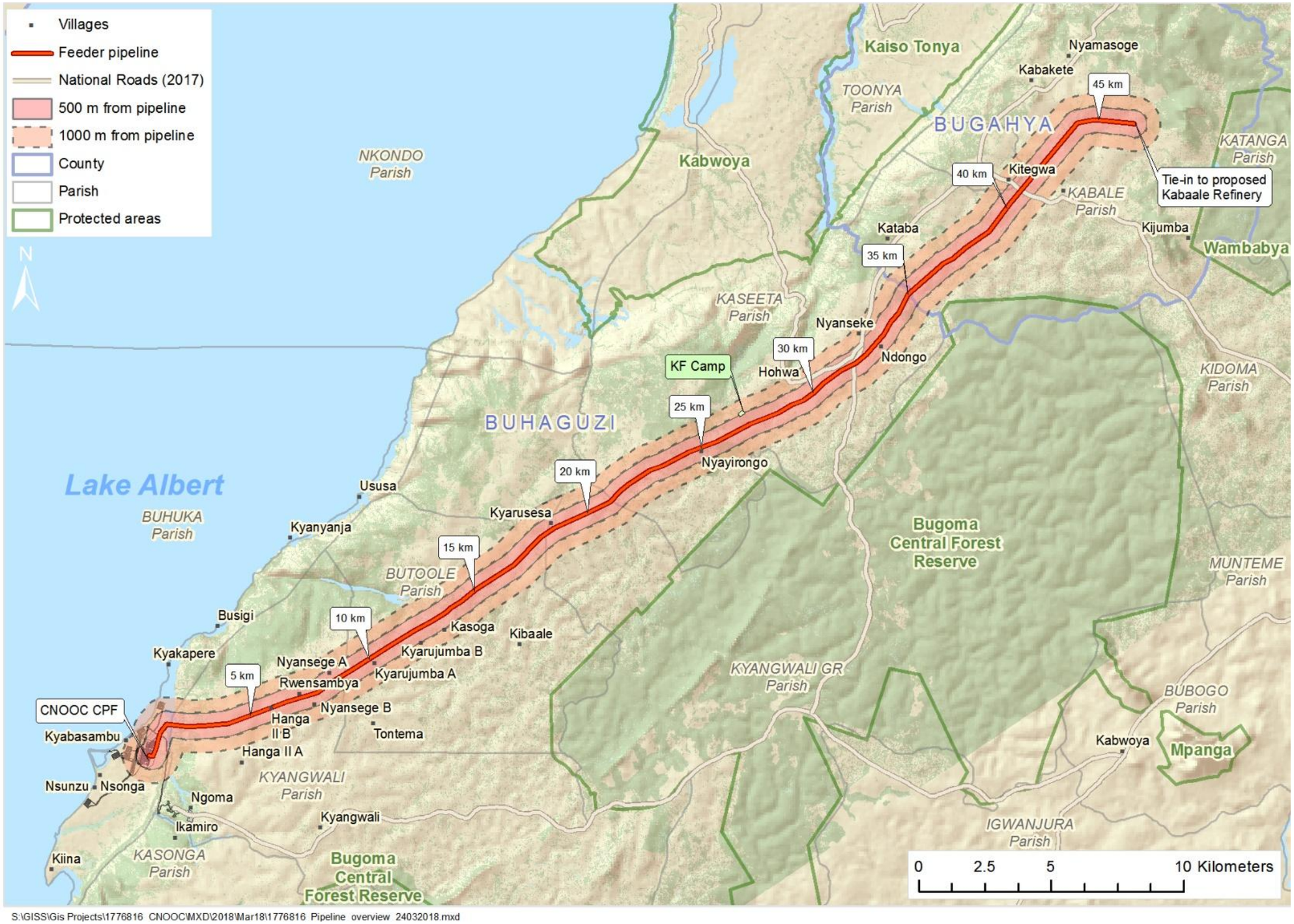

Figure 1: Location of the Feeder Pipeline.

3.0 ENVIRONMENTAL AND SOCIAL CONTEXT

The Kingfisher Field Development Area ESIA describes the baseline environmental conditions in detail. For purposes of this framework decommissioning plan is important to merely describe the high-level sensitivity of the receiving environment so that the reader has context to measures proposed. In this regard following key points are deemed relevant:

- The Kingfisher Field Development Area is located on the south-eastern shores of Lake Albert in Western Uganda. The Albertine rift system is a primary tributary of the Nile River. The water quality is largely unaffected by development, supports high diversity of aquatic fisheries on which Lakeshore communities make their living;
- The Buhuka flats on the shores of Lake Albert represent a small terrace of land at the foot slope of the escarpment. This land mass contains five villages which were largely isolated from easy access to market prior to initiation of the oil industry. Road development has changed this situation. Notwithstanding this, the development of a large petroleum processing facility (wells, flowlines and CPF with supporting infrastructure located on the Buhuka flats) will bring about further change during the life of the project area;
- The largely rural nature of the community prior to petroleum development is rapidly changing and will have changed significantly by the time that decommissioning is contemplated. This will need to be carefully assessed, as it has been during conceptualisation of the project, to ensure that the wind down of the petroleum production facility in this area into decommissioning is handled in a manner that is sensible, sensitive to and responsive to the needs of community that are likely to have developed some dependency on the industry; and
- The Government of Uganda have indicated their intent to put in place a physical development plan for the Buhuka flats in particular that will see structured development of this area. The extent to which this materialises in the years to come is yet to be proven but, it is important in this framework plan to acknowledge the development plan and draw the attention of CNOOC and the reader to the need to contemplate future decommissioning of the production infrastructure in a manner that seeks to extract mutual benefit from infrastructure which may no longer be required for petroleum production at that future point in time. Consequently, planned decommissioning of the facility will need to be carefully discussed and planned together with government to ensure that the interests of both government, local communities and the production licence holder are best met, specifically in regards to future beneficial use of infrastructure no longer required for purposes of petroleum production.

4.0 OBLIGATIONS AND RESPONSIBILITIES

4.1 CNOOC

CNOOC has the overall responsibility for ensuring that the project is undertaken in accordance with Ugandan legislation and the recommendations of this FFD-ESMP. CNOOC is also responsible for updating the FFD-ESMP, as and when necessary, during the life cycle of the project and must ensure that its staff and contractors adhere to the stipulations of the FFD-ESMP. Similarly, to ensure that all work conducted during construction and operation of the Kingfisher Field Development Area takes place in a manner that minimises unnecessary land take and seeks to avoid pollution and contamination so as to limit the requirements for decommissioning and clean-up once operations approach the state of decommissioning.

Consequently, CNOOC undertakes to manage all project activities in a manner that minimises adverse effects on the environment and the public, maximises socio-economic benefits for the project area and protects the health and safety of employees, contractors, visitors and the general public.

To this end, CNOOC will:

1) Ensure that the FFD-ESMP forms an integral part of the environmental management planning at the facility and that the document is available to all of their staff, consultants and contractors, as necessary;

2) Educate its personnel, contractors and visitors with regard to the safety, health and environmental (SHE) requirements applicable in general to the project;

3) Provide professional staff to give effect to its safety, health and environmental management commitments;

4) Appoint a competent Management Team to oversee all aspects of the project;

5) Appoint a competent CNOOC Environmental Coordinator (EC) prior to the commencement of decommissioning activities. The EC will perform regular inspections to monitor compliance with the FFD-ESMP, provide the appropriate level of management within CNOOC with monthly reports on environmental compliance and performance and provide guidance on the remediation of any unplanned environmental impacts. The EC will also motivate and draft any updates to the FFD-ESMP as and when they become necessary;

6) Undertake internal FFD-ESMP compliance inspections and audits. These inspections and audits will include all activities associated with the CNOOC project site in its entirety, including activities undertaken by CNOOC's contractors and agents;

7) Monitor, evaluate and report performance regarding safety, health and environmental protection to the relevant management level within CNOOC; and

8) CNOOC and its contractors will be responsible for implementation of the FFD-ESMP.

4.2 Contractors

Obligations and responsibilities of contractors are outlined below. Contractors shall:

1) Be required to enter into a contractual commitment with CNOOC to adhere to the requirements of this FFD-ESMP and the environmental guidelines and standards contained therein;

2) Familiarise themselves with the undertakings and requirements relevant to the project activities contained in this FFD-ESMP, educate their personnel accordingly and ensure that such undertakings and requirements are adhered to;

3) Prepare method statements describing the methods through which compliance with environmental standards will be guaranteed and submit them to CNOOC for approval. Although CNOOC may comment on any inadequacies in these statements, the contractor is solely and exclusively responsible in case of non-compliance with the standards contained in this document;

4) Employ techniques, practices and methods that ensure the fulfilment of these requirements, with specific reference to the control of waste and pollution, the prevention of loss or damage to natural resources and the minimisation of adverse effects on users and holders of neighbouring land and the public in general;

5) Take cognisance of the basic information provided in this FFD-ESMP, but shall also verify the accuracy of any information provided, report any inaccuracies or omissions to CNOOC's Management and Field Environmental Manager and, irrespective of any inaccuracies or omissions, comply with the intentions of the requirements stated in this FFD-ESMP;

6) Undertake any remedial measures within a reasonable period following the receipt of a written instruction from CNOOC to do so;

7) Take all reasonable and prudent measures to prevent the occurrence of accidents that may compromise the integrity of the environment and/or the health and safety of all persons on site, of all persons on neighbouring land and of the public;

8) Report to CNOOC or its representative all incidents including but not limited to environmental damage, injuries and/or loss of or damage to CNOOC's physical assets or corporate image;

9) In the event of an incident as described in point 8 (above) occurring, present a detailed plan to:

   a) Restore the environmental conditions, in so far as it is possible to do so, to a state similar to that existing before the incident;

   b) Address any injuries caused in a manner satisfactory to the injured party or parties and CNOOC; and

   c) Prevent the future occurrence of similar incidents.

10) Comply with CNOOC's internal environmental and social policies and standards;

11) Cooperate in periodic FFD-ESMP compliance audits by CNOOC, its external auditors and/or relevant government bodies and provide the necessary information to this effect; and

12) Should government authorities be of the opinion that any activities executed by the contractor cause unacceptable environmental damage or are inadequate to mitigate environmental damage; the contractor shall immediately consult the competent government authorities and CNOOC and reach an agreement about the remedial measures to be implemented. The measures agreed upon shall be implemented as soon as possible, so as to avoid the occurrence of further damage and to repair any damage that may have occurred. The contractor will be responsible for all relevant costs related to the applicable environmental damage.

4.3 Communication with Government, Communities and Stakeholders

Communication with the Ugandan Government regarding environmental management matters will be via CNOOC's Environmental Coordinator and Liaison Officer – Community and Stakeholder Affairs (LOCSA). Communication with local structures shall be undertaken by the Community Liaison Officer(s) (CLOs) appointed for the decommissioning period, with assistance, where necessary, from the LOCSA.

4.4 Permits and licences

National laws and regulations require many permits, licences and approvals that could apply to the project or specific activities. All applicable approvals, permits, consents, and licenses relating to the environment must be in place prior to any construction activities and must be stored in a location which is easily accessible to appropriate staff on site. A non-exhaustive guide to permits, licenses, and approvals is provided in APPENDIX B and it is responsibility of CNOOC and contractors to ensure all relevant permits, licenses, and approvals are acquired and complied with.

5.0 DECOMMISSIONING PRINCIPLES

There is no single 'across the board' principle that will best fit all activities, and no single infrastructure component need set a precedent for any other, although opportunities for generic approaches should be followed, where appropriate.

As the Kingfisher Field Development Area approaches a mature stage of its life it will be necessary to evaluate the fate of infrastructure developed at the site and the feeder pipeline. Specifically, with regards to the life of the project is currently contemplated. In its current state of the project has been developed in a manner that the processing capability of the facility will handle the production profile of the Kingfisher Field Development Area and, as this field matures and begins to taper off in terms of production, the produced fluids from the KT development will need to be tied into the CPF, or alternatively decisions taken on early decommissioning of the Kingfisher Field Development Area infrastructure. The latter scenario is not currently being contemplated. Thus, for purposes of framework decommissioning planning the activities that need to be considered *per se* are discussed irrespective of when in time detailed planning for decommissioning must commence

Decommissioning must follow precautionary principles, be risk based and cost effective. The following broad decommissioning principles apply:

- Carefully consider long term social and environmental liability of all proposed development actions during the lifespan of the project and, where feasible, implement alternatives that minimise long term risks;
- Follow an incremental approach to decommissioning by minimising the project footprint during the project lifespan and by decommissioning and rehabilitating areas as their productive use ends and they become available for decommissioning and relinquishment. Having said this, the nature of the operation is such that little land falls into this class and consequently in the latter phases of production, the bulk of the facility as described will remain in production and need to be planned for decommissioning as a whole. This includes the feeder pipeline. However in relation to the pipeline, appropriate rehabilitation at the end of the construction period should have ensured that the pipeline servitude is largely well vegetated and well maintained and consequently requires little additional remediation, except in areas where unplanned events may have occurred, or physical infrastructure requires removal. The benefit of early decommissioning of components of the site is that they can be rehabilitated and monitored during the latter phases of productive life of the facility allowing knowledge to be developed in relation to final rehabilitation. This opportunity should not be overlooked wherever possible;
- Legislation will change over the productive life of the facility. Consequently it will be necessary to carefully review and adapt to the relevant legislation where this is required in order to ensure that decommissioning planning takes place in a manner that is aligned with the requirements of the Government of Uganda together with CNOOC. Where applicable, use existing CNOOC management plans (e.g. CUL-QHSE-L3(GE)-053 Waste Management Specification) to manage aspects of decommissioning;
- Adapted to changes in the local environment, particularly taking account of the proposed physical development plan for the Buhuka Flats and associated areas which stands to materially influence the environment within which the project has been operated and may well influence certain decisions in relation to decommissioning. Consequently, the decommissioning framework will need to be re-evaluated periodically to ensure that it remains aligned with physical development planning changes likely to occur within the local area;
- Maximise efforts to assist local communities to build capacity throughout the life of the project to reduce the impact of job losses due to decommissioning and the termination of CNOOC's contribution to development in the area. Specifically, to plan adequately in advance to agree to people and re-skill people to ensure that the local workforce are able to transition economically to other forms of employment once petroleum production reaches an end;
- Systematically shut down the operating processes in a manner which minimises risks to project personnel, the environment, and the surrounding communities, both during and after decommissioning; and
- Provide early warning to stakeholders who are likely to be affected by the decommissioning.

6.0 DECOMMISSIONING GENERAL REQUIREMENTS

6.1 Transfer of Responsibility for Equipment and Infrastructure left for Community Use

The Government of Uganda are well underway at the time of completion of the ESIA with drafting a physical development plan for the Buhuka flats. This plan was only released in first form as the ESIA was being finalised and consequently is not considered in great detail during the impact assessment. However, by the time that the Kingfisher Field Development Area is in a mature state and decommissioning is being contemplated, the Buhuka flats will have changed considerably through a combination of structured government planning and influx to this development node. It is reasonable and common when a large infrastructure facility of this nature is decommissioned that infrastructure which has benefit to local

communities and government be considered and that planning takes place for the transfer of ownership and responsibility for such infrastructure to 3rd parties or government rather than demolition of that infrastructure.

To achieve greatest effect this needs to be carefully planned taking account of a number of factors, some of which are elaborated on below:

- The decommissioning planning process should be systematic and carefully consider each component of infrastructure that may have beneficial use. This consideration should not be limited only to infrastructure about which some interest has been expressed by third parties (government, communities, other parties et cetera). It should be a structured process that looks at the benefit of infrastructure that can be derived, together with liabilities associated with that infrastructure and consideration of the remaining life and maintenance costs of such infrastructure;
- Consideration needs to be given to the mechanisms to relinquish responsibility for infrastructure or components of the site and the future costs associated with such infrastructure or land. All too often heavy industry infrastructure is handed over for community use without due provision to accommodate the running and maintenance costs of such infrastructure and typically these costs exceed the economic bearing capacity of a non-industrial use and consequently need to be provided for through other mechanisms if the infrastructure is to be handed over for third party use;
- Local district and regional government should be consulted with prior to removal of any roads to ensure that they cannot optimally be utilised. In the relation to the current project however the road network developed to gain access to well pads will be utilised by the community and is consequently likely to stay. However, roads within the footprint of the project will need to be removed. Before ripping and rehabilitating such roads, consult with local, district and regional Government to determine whether they could be useful if left in place, while taking into consideration the ecological risk of induced impacts (unsustainable resource harvesting). If roads are to be left open, the transfer of the responsibility of maintaining them shall be considered - any conflicts between local, district and provincial interests regarding the maintenance of the roads must be resolved by the competent Government authorities;
- Consider the feasibility of transferring other fixed assets with beneficial re-use to third parties. Where practical, safe and useful options exist, which are agreed to by the parties, formally transfer responsibility (for maintenance and legal compliance) of specifically defined remaining infrastructure and equipment to identified third parties. Verify that the recipient of any infrastructure is properly instructed in the safe operating methods and appropriate maintenance of the equipment or infrastructure. If the recipient cannot demonstrate competence to safely manage the infrastructure, then it shall be removed or the necessary training shall be provided to ensure that it is safely managed;
- Obtain the approval of the relevant regulatory authorities and potentially affected community leaders before a decision is made to leave any equipment or infrastructure on site for third party use. Provision shall be made to ensure that this infrastructure or equipment does not create a safety hazard. Agreement will need to be reached and documented in such cases for these parties to take over liability for the equipment/infrastructure; and
- Document appropriate options for flowline/pipeline decommissioning including leaving them in place, or removing them for re-use, recycling or disposal. All relevant factors should be taken into account in this decision, including environmental risks of re-excavating the trenches if they are to be removed, pollution and ground settlement risks of leaving them in situ, financial cost, reuse and recycling value and any other considerations raised by Government and other stakeholders. It is common practice within the industry to flush and clean buried pipelines and leave them in situ rather than going through the process of excavation in landscapes that will have re-established and stabilised during the production life of the project.

6.2 Recycling and Reuse of Materials and Wastes

Sites with the potential for hydrocarbon contamination will be identified, characterised, and assessed for contamination. Contaminated soils will be removed and replaced with clean fill or remediated *in situ* in

accordance with applicable regulations and standard industry practices in place at the time of actual decommissioning.

Remediation and/or treatment methods will be selected, based on proven and effective technologies that will minimise or eliminate the potential for further contamination of the environment. Containers such as empty drums, portable tanks, and storage bins will be returned to vendors and: cleaned and recycled; cleaned and crushed for scrap; or landfilled.

Fluids and/or sludge from process vessels and storage tanks will be recovered and properly disposed. Any hazardous materials will be packaged, labelled, and taken to the project's hazardous waste facility for disposal. Project solid waste landfills will comply with a final closure plan.

Recycling and reuse of materials and waste is a key component of CNOOC's overall waste management strategy and this FFD-ESMP. The following general requirements apply:

- Dismantle equipment and materials that will not to be left *in situ*;
- Identify suitable recycling options for the equipment and materials that are dismantled, in line with best management principles of the waste hierarchy. Recycling and reuse of materials is to be maximised to the greatest extent possible, subject to safety and pollution considerations;
- Maintain a detailed log of all recycled materials, including auditable chain of custody information;
- Contract with an accredited recycling contractor for removal of all recycled waste.
- Recycling and reuse of materials is to be maximised to the greatest extent possible, subject to safety and contamination considerations.
- Management of decommissioned infrastructure earmarked for recycling or re-use shall be done in accordance with the most recent updates of CNOOC's Waste Management Plan, Ugandan domestic waste regulations, and any other relevant regulations applicable at the time.
- Comply with the specific requirements that are set out in CNOOC's Waste Management Plan and relevant Ugandan legislation concerning the identification, separation, temporary storage, and transport of recyclable and reusable materials. Materials for which separation and recycling is a requirement are:
    - Paper or cardboard;
    - Plastic;
    - Electronic equipment;
    - Metals;
    - Textiles;
    - Rubber (tyres);
    - Timber;
    - Electrical cables;
    - Glass; and
    - Scrap wood.

- Maintain a detailed manifest of all recycled and reused materials and equipment, including auditable chain of custody information; and
- As far as reasonably practical, and subject to considerations about safety and pollution, provide local people with first choice concerning acquisition of recyclable or reusable materials and infrastructure, non-polluting waste (such as uncontaminated timber), parts, and equipment.

6.3 Contaminated Land Management and Non-Recyclable Waste

During the operational life of the facility any inadvertent spills to the environment will be cleaned and contamination remediated. Consequently it is not anticipated that large areas of contamination will be present when decommissioning commences, provided that effective environmental management has been practised at the site. However, all land used during the productive life of the facility must nonetheless be tested and sampled to prove that the land is free of contamination. This is a structured and well documented process followed by the petroleum industry. It must be done. This step should not be avoided or bypassed in any way. It is not always possible to anticipate whether contamination has or has not taken place.

The following requirements set out the general procedures to be followed to rehabilitate contaminated land areas, should they be identified, and to dispose of non-recyclable waste generated during decommissioning:

- Preparation of a Contaminated Land Assessment that identifies all areas of contaminated land, the nature of the contamination and the necessary measures to contain and rehabilitate these sites. Specifications are to include *in situ* bioremediation, where feasible, or other measures to remediate the area in accordance with Ugandan legislation and good industry practice, including the removal of the contamination to an appropriate hazardous waste disposal site, if no other options are available;
- Contain liquid and solid hazardous wastes for temporary storage and safe disposal, in accordance with Ugandan legal standards, the CNOOC Waste Management Plan and any other appropriate standards and guidelines applicable at the time. This includes any wastewater generated by flushing and cleaning of pipelines and tanks to remove hydrocarbons and solid or liquid wastes generated during the decommissioning of wells;
- Prepare manifests of all hazardous wastes to be disposed in accordance with the CNOOC Waste Management Plan and Ugandan legislation;
- Prepare an inventory of all hazardous materials and wastes to be disposed of and specify the method of disposal in accordance with the MSDS, current Ugandan legislation at the time and best practice industry standards;
- Remove and dispose of uncontaminated concrete demolition waste at an appropriate certified waste disposal facility or as otherwise agreed with relevant authorities (e.g. NEMA);
- Remove and dispose of all litter, used parts, non-recyclable equipment, and general mixed non-recyclable domestic waste at an appropriately certified disposal site; and
- Disassemble and remove all non-recyclable parts, equipment and machinery from the site. If contaminated, either clean to remove hydrocarbons for disposal at a municipal landfill or dispose of in accordance with the hazardous waste requirements of CNOOC's Waste Management Plan (CUL-QHSE-L3(GE)-053) and Ugandan legislation.

Naturally occurring radioactive material (NORM)

Depending on the field reservoir characteristics, naturally occurring radioactive material (NORM) may precipitate as scale or sludges from the Feeder pipeline. Where NORM is present, a NORM management program must be developed so that appropriate handling procedures are followed. Procedures should determine the classification of the area where NORM is present and the level of supervision and control required. Facilities are considered impacted when surface levels are greater than 4.0 Bq/cm^2 for

gamma/beta radiation and 0.4 Bq/cm^2 for alpha radiation[1]. CNOOC must determine in consultation with relevant authorities, whether to leave the NORM in-situ, or clean and decontaminate by removal for disposal.

Sludge, scale, or NORM-impacted equipment should be treated, processed, or isolated so that potential future human exposures to the treated waste would be within internationally accepted risk-based limits. Recognized industrial practices must be used for disposal. If waste is sent to an external facility for disposal, the facility must be licensed to receive such waste.

6.4 Re-contouring, Reinstatement and Rehabilitation

Disturbed areas will be returned to natural contours where possible. Areas of high erosion will be identified in the field and treated with special design measures that may include anti-erosion mats or mulching. Compaction of the subsoil will be relieved by scarification in areas of disturbance. The topsoil stored during the clearing phase of construction will be returned to the site, evenly spread and lightly packed to prevent depressions and water pockets. In areas where topsoil was not stripped, the surface will be ripped or scarified to relieve compaction. Grading and surface reclamation activities will not take place when the topsoil is muddy or the subsoil is wet.

The general recommendations in this regard are a guide to preparing a more detailed, site specific Rehabilitation Plan, prior to closure, as a part of the final Decommissioning Plan:

- Shape, level, and de-compact the affected land after removal of project infrastructure, dress with topsoil and, where necessary, vegetate with indigenous species. Commission specialists to assist in planning re-vegetation and the management of environmental impacts, as required;
- Remove access roads with no beneficial re-use potential by deep ripping, shaping and levelling after the removal and disposal of any culverts, drains, ditches and/or other infrastructure. Natural drainage patterns are to be reinstated as closely as practicable;
- Shape all other channels and drains to smooth slopes and integrate into the natural drainage pattern;
- Construct contour banks and energy dissipating structures as necessary to protect disturbed areas from erosion prior to stabilisation;
- Promote re-vegetation through the encouragement of the natural process of secondary succession. Natural re-vegetation is dependent on de-compaction of subsoils and adequate replacement of the accumulated reserves of topsoil (for example, over the well sites) to encourage the establishment of pioneer vegetation;
- Seed will be applied uniformly in a manner appropriate for the type of seed used, and will be placed in a firm, moist seedbed at a suitable depth. Seedlings will be planted at a density and in a manner conducive to successful growth;
- In disturbed areas with little topsoil or naturally sparse vegetation, fertilization and mulching may be included in the site reclamation work. Seeded or planted sites failing to show successful growth after one growing season will be assessed to determine causes for failure, and corrections will be made as appropriate;
- Remove alien and/or exotic vegetation; and
- Undertake a seeding programme only where necessary, and as agreed with a re-vegetation specialist. Natural re-seeding is generally regarded as being the most effective means of rehabilitation, subject to proper reinstatement of topsoil. Acceptable cover from which typically occurs over two or three rain seasons.

[1] IFC Environmental, Health, and Safety Guidelines Onshore Oil and Gas Development (2007)

6.5 Socio-Economic Considerations

The closure of the project will present socio-economic challenges for the local communities. For example, loss of direct and indirect business and work opportunities due to the closure of operations may lead to increased unemployment and secondary negative socio-economic impacts. Most of the impacts will be related to the closure of the CPF, since few direct jobs are associated with the flowlines and wells. These considerations are described below at a project level as individual such economic considerations in relation to the feeder pipeline by itself cannot be isolated from the project.

At the time of closure, CNOOC must consider the potential effects resulting from the decommissioning of the project and work closely with local communities to:

- Ensure that employees are fully informed about decommissioning and how it will affect them well before the project finally closes;
- Build community capacity to manage opportunities and impacts arising from the decommissioning of the project; and
- Provide training to transfer project-learned skills to alternative and secondary industries (tailored to respond to a market economy).

7.0 DECOMMISIONING SPECIFIC REQUIREMENTS

7.1 Feeder Pipeline

The Feeder Pipeline will be decommissioned in accordance with applicable statutes and regulations, and international industry standards. Decommissioning is anticipated to be undertaken in a single campaign at the end of life of the project. Due to the impact associated with removing buried pipe, it is expected that most sections will be left in situ with any cathodic protection and associated cables.

Buried pipe will be drained, cleaned, filled with water containing a corrosion inhibitor, sealed at both ends, and abandoned in place. All cathodic protection infrastructure would be maintained so as to limit the potential for corrosion of the pipeline.

If deemed advisable by a suitably qualified environmental scientist (and following a risk assessment), pipe sections in some locations could be removed at the end of field operations. Any further options that are relevant at the time shall be considered, taking into account existing and future land use around the pipeline. These may include the opportunity to re-use the pipeline or sections of the pipeline for other purposes.

The following requirements shall apply:

- Prepare a detailed and site-specific decommissioning plan in accordance with the guidelines outlined in APPENDIX A of this report. This plan shall be approved by NEMA as a part of the final FFD-ESMP before proceeding with pipeline decommissioning and rehabilitation;
- Where sections of the pipeline are left in situ, leave them in a safe and stable condition that minimises the risks of hydrocarbon pollution, land settlement, and erosion;
- Flush and clean the pipeline in accordance with industry best practice guidelines and any relevant legislation at the time. Prior to disconnection and isolation, pig and purge all pipelines/flowlines to remove residual fluids and residues using the Best Available Technology (BAT) to ensure effective cleaning. A project specific “Cleaning and Disposal Plan” shall be developed as a part of the Pipeline Decommissioning Plan;
- If it is necessary to remove Naturally Occurring Radioactive Materials (NORM) from the pipeline, prepare a project-specific ‘Decontamination and Disposal Plan’. Appoint specialist contractors with a proven track record in this regard to manage and dispose of this waste;

- Provide relevant Ugandan authorities and local communities with information regarding the depth, position, size and condition of any pipeline sections left in situ to ensure the pipeline does not become an obstruction or hindrance to any future land management activities and utilities;
- Take suitable measures (such as cement plugs) in sloping areas to ensure the pipeline does not become a conduit for water. In general, plugs should be considered at appropriate spacing to ensure that changes in surface and groundwater conditions will not result in water flow through the pipeline;
- Recycle or reuse all surface infrastructure, or dispose of it in accordance with the requirements of the CNOOC waste management plan;
- Use Best Available Technology in the appropriate areas to prevent the risk of future subsidence or erosion (road crossings, wetland/river crossings, steep slopes);
- Conduct a Phase II site assessment at all areas where they were records of unplanned events, spills or contamination. This process should include invasive sampling to test for soil contamination. Implement the remedial measures proposed is not come of the Phase II assessment and monitor to prove effectiveness of the remediation proposed;
- Remediate any soils that have been contaminated by oil spills along the pipeline, in-situ. Only where in situ remediation is not possible should soils be collected for ex situ remediation or disposal at a hazardous waste site;
- Inventory and remove all surface infrastructure. This includes CP posts, marker posts and valve stations. Cut the pipeline ends to a depth that can be buried without harm to people or the environment;
- Develop a method statement for the purging of the pipeline to remove residual oil and scale and to capture contaminated waste water for treatment and disposal. If NORM is encountered, this should be separately managed by specialist waste contractors;
- Clean valve chambers and fill in with backfill. Break out concrete to below the depth at which it would interfere with future farming (greater than 0.75 m) and topsoil and reinstate;
- Collect any hazardous cleaning materials used to decommission the pipeline and dispose to a hazardous waste site;
- Remove all litter from site;
- Reinstate land in accordance with the requirements of section 6.4; and
- Prepare a monitoring and audit programme in accordance with the general guidelines set out in section 6.0.

8.0 CLOSURE AND POST-CLOSURE MONITORING, AUDITING AND REPORTING

8.1 Monitoring

Prior to decommissioning and rehabilitation activities, a Monitoring Plan shall be developed and submitted to NEMA for approval. The plan must cover proposed monitoring during and after the closure of the project and shall include verification of the following:

- Waste, wastewater, or other pollutants generated as a result of decommissioning are appropriately managed, in accordance with the detailed requirements set out in the Final Decommissioning Plan;
- De-contaminated sites are free of residual pollution after decommissioning;
- Feeder pipeline left in-situ has been cleaned and left in a safe condition which minimises the risks of pollution, ground settlement, and erosion, and that all surface infrastructure has been removed; and

- Progress towards an acceptable vegetation cover is being made in areas where natural vegetation is being re-established. 'Acceptable cover' means re-establishment of a mixture of indigenous herbaceous and woody plant communities over the disturbed areas which is at a density that represents surrounding undisturbed areas, non-eroding, and free of invasive alien plants.

8.2 Reporting and Auditing

Annual environmental reporting to NEMA and other relevant government departments is recommended **for at least three years** post-decommissioning, or at intervals agreed with NEMA and relevant authorities at the time that the final decommissioning plan is prepared and approved.

Monitoring reports shall include a list of any remedial action necessary to ensure that infrastructure (not removed) remains safe and pollution free and that rehabilitated project sites are in a stable condition, progressing towards 'acceptable cover', and free of alien invasive species. Monitoring reports may be prepared by experienced CNOOC personnel or by appropriately qualified independent specialists.

A final audit report of all decommissioning activities shall be prepared by an appropriately qualified independent specialist consultant, with experience of final project closure in the oil and gas industry. Any post closure audit requirements shall be determined in consultation with NEMA and other relevant authorities. This report shall cover all environmental and social aspects described in the final D-ESMP.

9.0 DECOMMISSIONING COSTS

CNOOC shall prepare a decommissioning cost estimate and establish a fund to cover these costs. The estimate and the fund must be updated annually.

Costs should continue to be updated and should include the possible costs associated with ongoing monitoring that is required in the period after decommissioning.

10.0 POST DECOMMISSIONING LIABILITY

Any residual liability arising from (or relating to) decommissioning will remain with CNOOC in perpetuity. The Company will remain responsible for complying with any conditions attached to the Authority's approval of the Decommissioning and Rehabilitation programme; provided, however, that such residual liability will not extend to any damages and losses arising out of acts or omissions from a third party. A "third party" will include (but not be limited to) new owners, operators or licensees. In no event will the Company be held liable for losses or damages caused by third parties other than itself.

11.0 DOCUMENT CONTROL

All changes to the FFD-ESMP must be tracked, including details of the change, date of the change and name of the reviewer. The EC shall ensure that any modifications are communicated, explained to and discussed with all affected parties (Any appointed Contractors, CNOOC management and any directly affected party who requests this information), and shall be submitted to and approved by NEMA.

CNOOC shall prepare a document control procedure, which shall define:

- Document distribution;
- Document retention; and
- Management of FFD-ESMP revisions.

APPENDIX A

Feeder Pipeline Decommissioning Plan

Technical Specifications

Inventory information describing: length; depth; diameter and wall thickness; material; type of service (oil, gas, multi-phase); fluid composition (from CPF); corrosion coating; remaining life of cathodic protection; design structural life; associated surface structures and/or valve assemblies.

Historical Data

A summary of historical records to be compiled including the following:

- Installation period;
- Pipeline route map (topographic and aerial or satellite images);
- Original condition of right-of-way (RoW);
- Land use map;
- Documented as-built information;
- Landowner RoW agreements;
- Recent inspection and corrosion records; and
- Damage and repairs during pipeline life.

Survey Data Requirements

Coordinates and mapping of the Feeder Pipeline section to be decommissioned. Recent aerial photos or satellite images; details of present condition of the RoW, (erosion, vegetation cover and land use) and pipeline corrosion report.

Decommissioning Options

The Feeder Pipeline network may require decommissioning using one or a combination of options, as determined by the conclusions of this site-specific assessment. Decommissioning options are to be set out in the report, taking into consideration all factors applicable at the time and based on discussions with all relevant stakeholders

Reuse

If an opportunity for reuse can be identified, a preliminary assessment should be performed to evaluate its feasibility. When assessing the reuse of pipelines in situ, CNOOC should consider, inter alia, the following:

- The pipeline design life along with structural condition and integrity;
- The cleanliness of the pipe; and
- The transfer of liabilities.

Assessment of Environmental Impact

The report shall include an assessment of environmental impact, the content of which will depend on the decommissioning options selected. The assessment shall include issues such as:

- Landowner and local administrative preferences;
- Pipe cleaning and decontamination;
- Environmental management and disposal of waste water and residues;
- Land use management and land rights;
- Ground subsidence;

- Erosion;
- Creation of water conduits;
- Rehabilitation; and
- Control of alien species.

Recommended Management and Mitigation

Proposed management and mitigation measures shall be set out, considering the following:

Cleaning Requirements

Prior to disconnection, isolation and/or removal, all pipe sections should be pigged and purged to flush residual fluids and residues using the Best Available Technology (BAT) to ensure effective cleaning. A project specific "Cleaning and Disposal Plan" shall be developed as a part of the final decommissioning plan, detailing the following:

- Historical information about the fluids (fluid composition, operating and maintenance records);
- Details of the water source, equipment, chemicals and techniques used for purging, (gases) and/or scraping (solids);
- The measures taken to contain solid and liquid wastes and prevent spills during the cleaning process and/or the disposal methods of hydrocarbon gases (venting or flaring); and
- The management (analysis, treatment, transportation and final disposal destination) of residual wastes from the cleaning process, in accordance with the CNOOC's Waste Management plan, as amended on the basis of current Ugandan legislation.

Decontamination Requirements

It is possible that decontamination of radioactive residues (NORM) will be necessary. Where the removal of NORM is identified as a requirement of pipeline decommissioning, the documentation must include a project specific "Decontamination and Disposal Plan" as part of the final decommissioning plan and consist of, but not be limited to, the following:

- Estimate of the nature and quantity of contaminated materials & residues;
- The method of decontamination and the types of chemicals used;
- The equipment and storage capacity to contain decontamination fluids and wastes;
- Mitigation measures to minimise potential environmental impacts; and
- The management, transport and final disposal destination of residual wastes from the decontamination process.

Any removal of NORM shall be undertaken by a specialist contractor with a proven track record for the management of radioactive wastes. The location of the proposed disposal site shall be agreed with relevant authorities in advance of disposal.

Communication with Stakeholders

Stakeholder consultation shall be undertaken as a basis for the assessment of impact and proposed mitigation. Stakeholders shall include relevant Government departments at National, Provincial, District and Local level and local communities in the Project Area. A record of all stakeholder meetings shall be kept and stakeholder views shall be described in a Comment and Response Report.

APPENDIX B

Guide to Permits, Licenses and Approvals

Table A: Guide to permits, licenses and approvals needed (This table is a non-exhaustive guide only and it is responsibility of CNOOC and contractors to ensure all relevant permits, licenses, and approvals are acquired and complied with)

Type of permit/ approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
Groundwater Abstraction Permit/Surface Water Abstraction Permit	The Water Act, Cap 152	Section 18: Subsection (1): No person shall construct or operate any works unless authorized to do so under this Part of the Act. Section 18: Subsection (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.	Any abstraction of water from natural surface waters (lake, river or stream) and groundwater (aquifer, spring, etc.)	Directorate of Water Resource Management (DWRM)	■ Form A: Application for a Surface Water Permit; and ■ Form B: Application for a Ground Water Permit.	Prior to any project-related surface or groundwater abstraction
	The Water Resources Regulations, 1998	Regulation 3, sub-regulation (1): A person who, (a) occupies or intends to occupy any land; and (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, Sub-regulation (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 ground water permits.				
Construction Permit	The Water Act, Cap 152	Section 18: Subsection (1): No person shall construct or operate any works unless authorized to do so under this Part of the Act. Section 18: Subsection (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.	■ Any works or structures constructed in or adjacent to natural waters (rivers or lakes) whether temporary or permanent; and ■ Any abstraction of groundwater requiring construction of a borehole.	DWRM	Form F1: Application for Construction Permit	Prior to any project-related water abstraction construction of works or structures in or adjacent to natural waters
	The Water Resources Regulations, 1998	Regulation 16, Sub-regulation (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) re-charging 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.				
Waste Water Discharge Permit	The Water (Waste Discharge) Regulations, 1998	Regulation 4, sub-regulation (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.	Any project likely to result in the discharge of effluent or waste water (treated or untreated) onto land or into a water body.	DWRM	Form A: Application for a Waste Discharge Permit	Prior to construction of project facilities (e.g. camps, well pads)
Licence to Emit Noise in Excess of Permissible Noise Levels	The National Environment (Noise Standards and Control) Regulations, 2003	Regulation 12, Sub-regulation (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.	Projects in which it is highly likely that noise levels generated by the proposed activity will exceed permissible levels and cause a significant nuisance effect (e.g. flaring and quarrying).	NEMA	Form NEMA/NC: Application for a Licence to emit noise in excess of permissible noise levels	Prior to commencement of activities likely to emit noise in excess of permissible levels
Permit to Carry Out a Regulated Activity in a Wetland/River Bank/Lake Shore	The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000	Regulation 12, Sub-regulation (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, Sub-regulation (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.	Any regulated activity (listed in the Second Schedule to the Regulations) undertaken in a wetland, or within the protection zone of a riverbank:	NEMA	Form A: Application for a Permit to Carry Out a Regulated Activity in a Wetland/River Bank/Lake Shore	Prior to undertaking any project activities within wetlands, riverbanks or lake shores

Type of permit/ approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
		Regulation 23, Sub-regulation (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.	■ 100 m from the highest watermark of a river listed in the Sixth Schedule; ■ 30 m for a non-listed river; ■ 200 m from the low watermark for a listed lake; and ■ 100 m for a non-listed lake.			
Registration of a Workplace	The Occupational Safety and Health Act, 2006	Section 40, Subsection (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.	Any project requiring the establishment of a work place (e.g. drill site or camp)	■ Department of Occupational Safety and Health; and ■ Ministry of Gender, Labour and Social Development.	Particulars to be Submitted When Applying for the Registration of a Workplace or a Change in the Registered Occupier	Immediately upon (not later than one month) prior to undertaking any site works (construction, operation, pre-construction surveys)
Development Permission	The Physical Planning Act, 2010	Section 33, Subsection (1): A person shall not carry out a development within a planning area without obtaining development permission from a physical planning committee.	Any development involving construction of permanent or semi-permanent structures or establishments such as base camps	District Technical Planning Committee	Form PPA 1: Application for Development Permission	Before commencement of any project activities
Licence for Storage of Hazardous/Non-Hazardous Waste	The National Environment (Waste Management) Regulations, 1999	Regulation 6, Sub-regulation (1): A person intending to store waste on his or her premises shall apply to the Authority for a licensed in Form III set out in the First Schedule.	Any project requiring construction or operation of a storage facility for hazardous or non-hazardous waste (e.g. drill cuttings)	NEMA	Form III: Application for a Licence for Storage of Hazardous Waste	Prior to commencement of any activity requiring temporary storage of hazardous waste
Authorisation to use radioactive sources	The Atomic Energy Act, (Cap 143)	Section 32, Subsection (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.	Projects requiring the use of radioactive materials e.g. oil well drilling	Atomic Energy Council, Ministry of Energy and Mineral Development	Notification of Council (requirements listed in Section 34 (2)) Application for an Authorisation (required information listed in Section 35 (1) of the Act	Prior to commencement of project activities (specifically well drilling)
Licence to erect or carry on a magazine	The Explosives Act, (Cap 298)	Section 22, Subsection (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.	Activities requiring the temporary storage of explosives	Ministry of Internal Affairs	Licence to erect or carry on a magazine	Prior to procurement and/or use of explosives
Lease Agreement	The 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.	Access to or use of land for project activities	District Land Board	Application for Lease	Prior to temporary use of or access to land for project activities.

Type of permit/ approval	Supporting legislation	Requirement	Applies to	Approving authority	Type of application submitted	Stage at which approval is required
	The 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.				
	The 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 b) that person's claim to compensation for land under this Act is settled by the grant of other land or in any other way.				