

Environmental and Social Management Plan (ESMP)

Rehabilitation of the 1.15km of Xiro-Kowaad Irrigation Pipeline Canal and its Auxiliary Structures Somalia Food Systems Resilience Project (S-FSRP) Jubaland State – Luuq District, Gedo.

Prepared by

FOOD and AGRICULTURE ORGANIZATION (FAO)

In coordination with

**MINISTRY OF AGRICULTURE AND IRRIGATION JUBALAND STATE &
FEDERAL MINISTRY OF AGRICULTURE AND IRRIGATION (FMOAI)**

Under

Somalia Food System Resilience Program (S-FSRP)
Technical Assistance
Component 5: Contingency Emergency Response Component
UTF/SOM/088/SOM

Date: February 2026

LIST OF ABBREVIATIONS AND ACCRONYMS

Acronym	Definition
BoQ	Bill of Quantities
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CHS	Community Health and Safety
C-ESMP	Contractor Environmental and Social Management Plan
CoC	Code of Conduct
CP	Chance Find Procedure
DA	District Administration
EHS	Environmental, Health and Safety (World Bank Group Guidelines)
EPMA	Environmental Protection and Management Act (Somalia, 2024)
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Standard (World Bank)
ESF	Environmental and Social Framework (World Bank)
ESMP	Environmental and Social Management Plan
ESMF / FESM	Environmental and Social Management Framework (S-FSRP)
FAO	Food and Agriculture Organization of the United Nations
FGS	Federal Government of Somalia
GBV	Gender-Based Violence
GM	Grievance Mechanism
GRS	Grievance Redress Service (World Bank)
IDP	Internally Displaced Person (not used heavily in this ESMP but included for completeness)
ILO	International Labour Organization
LMP	Labor Management Procedures
MoAI-FGS	Ministry of Agriculture and Irrigation – Federal Government of Somalia
MoAI-JS	Ministry of Agriculture and Irrigation – Jubaland State
MoECC	Ministry of Environment and Climate Change (Federal)
MIS	Management Information System
NPCU	National Project Coordination Unit (MoAI-FGS)
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PIU	Project Implementation Unit (State MoAI)
PPE	Personal Protective Equipment
SEA	Sexual Exploitation and Abuse
SEA/SH	Sexual Exploitation, Abuse, and Sexual Harassment
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SMP	Security Management Plan / Framework
S-FSRP	Somalia Food Systems Resilience Project
SOP	Standard Operating Procedure
TA	Technical Assistance
TMP	Traffic Management Plan
UNCCD	United Nations Convention to Combat Desertification

WBG	World Bank Group
WMP	Waste Management Plan
WUC	Water User Committee

LIST OF TABLES

Table 1: Summary of Potential Environmental and Social Risks	21
Table 2: Environmental & Social Mitigation Plan	29
Table 3: Environmental & Social Monitoring Plan	38
Table 4: Summary of Capacity Building Plan.....	40
Table 5: Stakeholder Meeting Summary.....	45
Table 6: ESMP Budget Breakdown.....	48
Table 7: GM Contact List (Project, State, National & FAO/OIG).....	55
Table 8: GM Intake/register.....	56

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACCRONYMS	2
LIST OF TABLES	3
Executive Summary	6
1. Introduction	8
1.1 Background	8
1.2 Purpose of the ESMP	8
1.3 Methodology	9
1.4 Climate Risk Screening Summary	10
2. Sub-project Description	10
2.1 Overview	10
2.2 Location of the Sub-project.....	11
2.3 Scope of Works	11
2.4 Duration and Workforce and Design Capacity and Command Area	13
2.5 Machinery and Materials.....	14
2.6 Access and Logistics	14
2.7 Project Beneficiaries	14
3. Environmental and Social Baseline.....	14
3.1 Environmental Baseline	14
3.2 Social Baseline	16
4. Legal and Regulatory Framework	19
4.1 National Legal and Institutional Framework.....	19
4.2. Relevant National legislation	20
4.3 The World Bank Environmental and Social Framework (ESF).....	21
5. Environmental and Social Risks and Impacts.....	25
Overview.....	25
5.1 Positive Impacts.....	25
5.2 Potential Negative Impacts	25
5.3 Risk Assessment and Significance Ranking	28
6. Environmental and Social Management Plan	28
6.1 Environmental & Social Monitoring Plan.....	37
6.1.1 Monitoring Approach and Frequency	39
6.2 Capacity Building and Training Plan.....	39
6.2.1 Training Objectives	39
7. Implementation Arrangements	41
7.1 Coordination and Communication Mechanisms.....	43
7.2 Grievance Management Integration.....	43

7.3 Compliance, Enforcement, and Adaptive Management	43
8. Public Consultation and Disclosure	43
8.1 Consultations with Jubaland MoAI	43
8.2 Community Consultations in the Xero-koowaad Command Area.....	44
8.3 Key Issues Raised and How They Are Addressed	44
8.4 Information Disclosure	45
9. Grievance Mechanism (GM)	45
9.1 GM Structure and Process	46
9.2 Handling of SEA/SH-Related Cases	46
9.3 GM Accessibility and Communication	46
9.4 Roles and Responsibilities.....	47
9.5 Monitoring, Reporting, and Improvement	47
10. ESMP Implementation Budget.....	48
Annex 1: Environmental & Social Screening.....	49
Annex 2: Grievance Mechanism (GM) Tools and Templates	55
Annex 3: Community Consultation Minutes and Attendance.....	58
Annex 4: Government Land Ownership Confirmation	62
Annex 5: Design of tank and pump house	62
Annex 6: Stakeholder Consultation Photos	63

Executive Summary

This Environmental and Social Management Plan (ESMP) has been prepared for the rehabilitation of the Xero-koowaad irrigation canal located in Luuq District, Jubaland State, Somalia. The sub-project is financed under the Somalia Food Systems Resilience Project (S-FSRP) with funding from the World Bank and is implemented by the Federal Ministry of Agriculture and Irrigation (MoAI-FGS) through the National Project Coordination Unit (NPCU), in close coordination with the Jubaland State Ministry of Agriculture and Irrigation (MoAI-JS). Technical Assistance, including engineering design, environmental and social safeguards preparation, and construction supervision, is provided by the Food and Agriculture Organization of the United Nations (FAO).

The Xero-koowaad irrigation system was originally developed as a piped irrigation scheme abstracting water from the Juba River using diesel-powered pumping. Over time, the system has become largely ineffective due to extensive pipeline leakage, seepage losses, inadequate operation and maintenance, and rising diesel fuel costs. As a result, irrigation services have been unreliable, leaving significant portions of the command area under-irrigated despite the availability of river water. Joint technical assessments conducted in October 2025 confirmed that the farming area lies above river level, making open-channel conveyance infeasible and reinforcing the need for a pressurized pipeline system as the only viable technical solution.

The Xero-koowaad Canal serves a Gross Command Area of approximately 39.2 hectares, of which 31.36 hectares are considered cultivable. Agriculture within the command area is dominated by banana production, a high-water-demand crop that requires reliable and timely irrigation. The proposed rehabilitation will restore irrigation services through the installation of a solar-powered pumping system, a 1,150-meter DN300 mm HDPE pressurized pipeline, a reinforced concrete distribution water tank located at the highest point of the command area, and associated hydrants for controlled water distribution. The system is designed to operate for eight hours per day using solar energy, eliminating dependency on diesel fuel, reducing operational costs, and improving long-term sustainability.

Environmental and social screening classified the Xero-koowaad sub-project as a Moderate Risk activity. Potential adverse impacts are expected to be site-specific, temporary, and reversible, primarily associated with excavation works, pipeline installation, movement of machinery, workforce presence, and temporary access disruptions. Key environmental risks include localized soil disturbance, dust and noise emissions, and improper handling of construction waste if unmanaged. Social risks relate mainly to occupational health and safety, community safety around open trenches and moving equipment, labor management issues, and low-level risks of sexual exploitation and abuse or harassment (SEA/SH) associated with labor-community interaction.

Key environmental and social risks requiring focused management include: (i) trench collapse and worker injury during pipeline excavation, which will be mitigated through trench shoring, benching or sloping in accordance with international safety standards, daily excavation inspections, and mandatory use of personal protective equipment (PPE); (ii) community safety risks associated with open trenches and moving machinery, which will be mitigated through fencing of work areas, warning signage in Somali language, controlled access, backfilling within

the shortest feasible time, and continuous community awareness; and (iii) potential sedimentation or accidental spills affecting the Juba River during intake and pump house works, which will be mitigated through erosion control measures, bunded fuel storage, spill kits on site, and strict supervision of works near the riverbank.

These risks are considered manageable through the implementation of standard mitigation measures consistent with Good International Industry Practice (GIIP) and the World Bank Environmental and Social Framework (ESF). The ESMP sets out clear measures covering occupational health and safety, pollution prevention, waste management, traffic and access control, community health and safety, labor standards, SEA/SH prevention, and grievance management. No land acquisition or involuntary resettlement is anticipated, as all works are confined to existing public land along the former pipeline alignment.

Stakeholder engagement undertaken during the assessment process included consultations with farmers, canal committee representatives, elders, and relevant district authorities. Stakeholders expressed strong support for the rehabilitation, emphasizing the need for reliable water supply, reduced pumping costs, and equitable distribution across the command area. Concerns related to construction safety, access to farms during works, and transparency in labor recruitment were raised and have been addressed through phased construction planning, clear communication, and inclusion of a functional Grievance Mechanism (GM).

Institutional responsibilities for ESMP implementation are clearly defined. MoAI-FGS/NPCU provides overall oversight and ensures compliance with the Environmental and Social Commitment Plan (ESCP). The Jubaland State MoAI PIU leads field-level coordination and community engagement. FAO supports safeguards supervision and reporting as part of its Technical Assistance role. The construction contractor is required to prepare and implement a Contractor Environmental and Social Management Plan (C-ESMP) consistent with this ESMP before commencing works.

With effective implementation of the proposed mitigation and monitoring measures, the rehabilitation of the Xero-koowaad irrigation canal is expected to deliver substantial benefits, including restored irrigation services, increased agricultural productivity, reduced fuel costs, lower greenhouse gas emissions, and improved livelihoods for farming households in Luuq District. The ESMP provides the operational framework to ensure that these benefits are achieved in an environmentally sustainable and socially responsible manner.

A climate risk screening was conducted for the Xero-koowaad sub-project. The primary climate-related hazards include prolonged droughts affecting river discharge, extreme heat affecting worker safety and irrigation demand, and episodic flooding of the Juba River that may temporarily impact riverbank infrastructure. The adoption of a solar-powered pumping system enhances resilience by reducing dependency on fuel supply chains during shocks, while the use of a buried pressurized pipeline minimizes flood damage risks compared to open canals. The pump house and associated structures will be designed considering historical high-water levels to reduce vulnerability to flood events.

1. Introduction

1.1 Background

The Somalia Food Systems Resilience Project (S-FSRP), financed by the World Bank and implemented by the Federal Ministry of Agriculture and Irrigation (MoAI-FGS), supports the rehabilitation of critical irrigation infrastructure to strengthen agricultural productivity, food security, and climate resilience across Somalia's riverine regions. A core focus of the project is the Jubba River Basin, where decades of conflict, limited maintenance, rising fuel costs, and repeated climate shocks have significantly degraded irrigation systems and reduced irrigated land coverage.

Within this context, the Xero-koowaad irrigation canal, located in Luuq District of Jubaland State, has been identified as a priority sub-project following joint technical assessments conducted by the Federal Ministry of Agriculture and Irrigation, the Jubaland State Ministry of Agriculture and Irrigation, and the Food and Agriculture Organization of the United Nations (FAO). The canal forms part of the broader Bandar irrigation zone but functions as an independent irrigation unit serving a defined command area adjacent to the Juba River

The Xero-koowaad system was originally constructed as a piped irrigation scheme, abstracting water from the Juba River using diesel-powered pumps. Over time, the system has become largely inefficient due to extensive pipeline leakage, seepage losses, inadequate operation and maintenance, and escalating diesel fuel costs. These constraints have resulted in unreliable water delivery, particularly to downstream farms, leaving significant portions of the command area under-irrigated despite the availability of river water.

Topographic surveys confirm that the farming area served by Xero-koowaad lies above the river level, rendering open-channel conveyance technically infeasible. As such, a pressurized pipeline system supported by solar-powered pumping represents the only viable and sustainable solution for restoring irrigation services to the command area. The proposed intervention aligns with national priorities to reduce dependency on fossil fuels, lower operational costs for farmers, and improve the resilience of irrigation systems to climate variability.

The rehabilitation of the Xero-koowaad Canal is implemented under the S-FSRP Technical Assistance arrangement with FAO, which provides engineering design, environmental and social safeguards support, construction supervision, and reporting. Overall implementation responsibility remains with MoAI-FGS through the National Project Coordination Unit (NPCU), while the Jubaland State Ministry of Agriculture and Irrigation provides field-level coordination through its Project Implementation Unit (PIU).

1.2 Purpose of the ESMP

This Environmental and Social Management Plan has been prepared to guide the safe, environmentally sound, and socially responsible rehabilitation of the Xero-koowaad irrigation canal in Luuq District. The ESMP provides a practical and enforceable framework for identifying, managing, and monitoring environmental and social risks associated with the proposed civil works during both construction and operation phases.

Specifically, the ESMP aims to ensure that all project activities comply with the World Bank Environmental and Social Framework (ESF), relevant Environmental and Social Standards (ESS), Somalia's national environmental and labor legislation, and the S-FSRP Environmental and Social

Management Framework. The plan identifies potential site-specific risks related to excavation, pipeline installation, solar pumping infrastructure, workforce management, community safety, and stakeholder engagement, and sets out mitigation measures that are proportionate to the project's moderate risk classification.

The ESMP also defines clear institutional roles and responsibilities among MoAI-FGS/NPCU, the Jubaland State MoAI PIU, FAO as the Technical Assistance provider, the construction contractor, local authorities, and community water management structures. It serves as the primary reference document for the preparation and implementation of the Contractor's Environmental and Social Management Plan (C-ESMP), which will operationalize ESMP requirements at site level.

Through this framework, the ESMP supports the restoration of irrigation services while safeguarding community wellbeing, worker health and safety, environmental integrity, and equitable access to project benefits.

1.3 Methodology

The preparation of this ESMP followed a structured and evidence-based methodology consistent with World Bank requirements and national regulatory procedures. The process combined desk reviews, field investigations, technical and hydraulic assessments, and stakeholder consultations to ensure that environmental and social considerations were fully integrated into project design and implementation planning.

A detailed review of relevant documentation was undertaken, including the S-FSRP Environmental and Social Management Framework, Labor Management Procedures, Stakeholder Engagement Plan, Grievance Mechanism Framework, and national environmental legislation. Technical data and baseline information were drawn from the Luuq Canal System assessment, with specific extraction and validation of all information relevant to the Xero-koowaad Canal only

Field assessments conducted by FAO and government technical teams examined the existing pipeline alignment, intake location, command area characteristics, access routes, and areas sensitive to flooding or erosion. These assessments were complemented by hydraulic and agronomic analyses using FAO-standard methodologies to determine irrigation demand, design flow rates, and infrastructure requirements.

Consultations were held with local farmers, canal committee representatives, elders, and relevant district-level authorities to understand water-use practices, livelihood dependencies, safety concerns, and expectations regarding the rehabilitation works. Feedback from these engagements informed the identification of potential social risks and the design of mitigation and communication measures.

Environmental and social risks were then screened and evaluated in line with the World Bank ESF to determine applicability of relevant Environmental and Social Standards. Based on this screening, the sub-project was classified as Moderate Risk, warranting the preparation of a site-specific ESMP rather than a full Environmental and Social Impact Assessment.

This integrated methodology ensures that the ESMP for the Xero-koowaad Canal is technically sound, context-appropriate, and operationally focused, providing a clear safeguards roadmap for implementation.

1.4 Climate Risk Screening Summary

The Xero-koowaad Irrigation Rehabilitation Sub-Project was screened for climate risks in accordance with the World Bank Climate and Disaster Risk Screening Tool. Luuq District experiences recurrent drought cycles, high inter-annual rainfall variability, and episodic flooding along the Juba River. Historical records indicate periodic river overbank flows during intense Gu rainfall seasons and upstream releases. Increasing temperatures and evapotranspiration rates further elevate irrigation water demand for high-value crops such as banana.

The project design incorporates climate-resilient features, including solar-powered pumping to reduce operational vulnerability during fuel supply disruptions, buried HDPE pipeline infrastructure less susceptible to flood damage than open canals, and elevated placement of electrical and control equipment above historical flood levels. These measures collectively reduce climate-related operational risks and enhance long-term irrigation reliability under projected climate variability scenarios.

Mitigation Framework Summary

The ESMP adopts a mitigation hierarchy approach, emphasizing avoidance, minimization, and management of risks. Key measures include occupational health and safety controls (trench stabilization, PPE, working-at-height safeguards), pollution prevention (controlled fuel storage, waste segregation, erosion control), community health and safety measures (site fencing, traffic management, access control), SEA/SH prevention through worker Codes of Conduct and confidential grievance channels, and structured monitoring and reporting mechanisms. These measures ensure proportionate risk management aligned with the Moderate Risk classification.

2. Sub-project Description

2.1 Overview

The Xero-koowaad Irrigation Rehabilitation Sub-Project is located in Luuq District, Jubaland State, along the Juba River. The sub-project aims to restore a deteriorated irrigation system that historically supported irrigated agriculture but has become inefficient due to pipeline leakage, high diesel pumping costs, and prolonged lack of maintenance.

The system was originally developed as a pressurized piped irrigation scheme, drawing water directly from the Juba River. Over time, the integrity of the pipeline declined, resulting in significant conveyance losses and unreliable water delivery to farms. As a consequence, only limited portions of the command area currently receive irrigation, constraining agricultural productivity despite the availability of river water.

The proposed intervention will rehabilitate and modernize the system through the installation of a solar-powered pumping scheme, a pressurized HDPE pipeline, a distribution water tank, and associated hydrants. The rehabilitation is designed to restore reliable, efficient, and equitable irrigation services while reducing operational costs and eliminating dependency on diesel fuel.

2.2 Location of the Sub-project

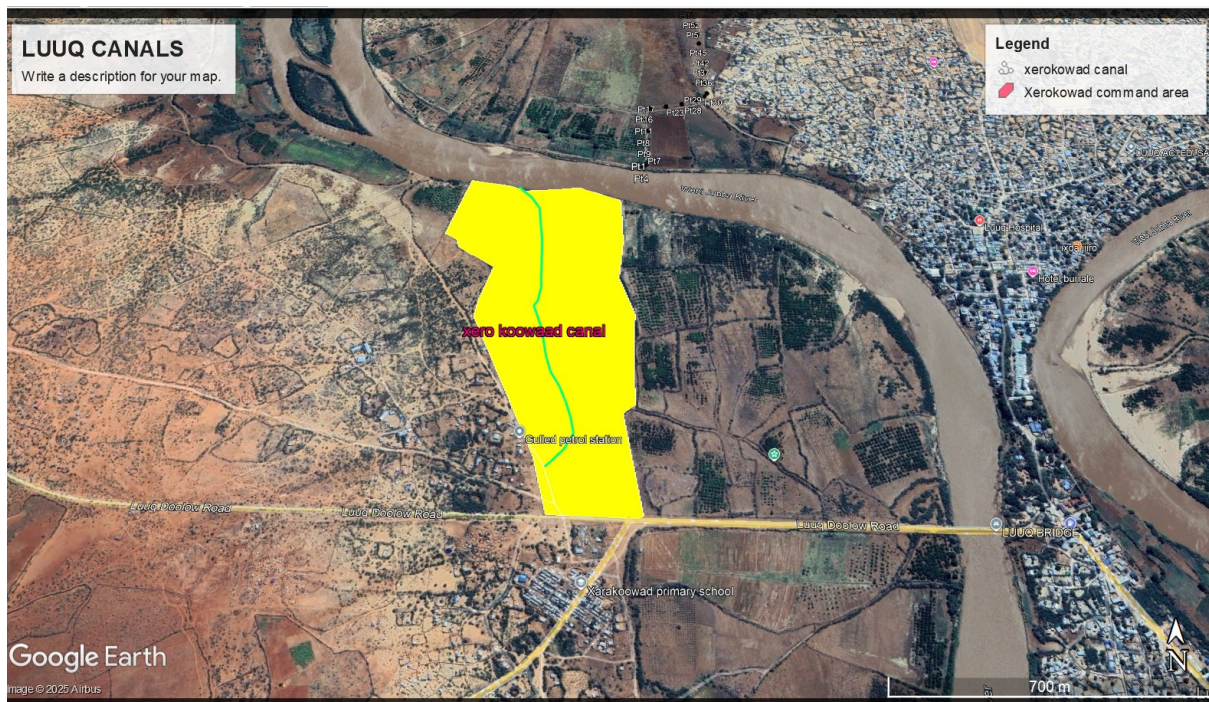
The Xero-koowaad Canal is situated adjacent to the **Juba River** in Luuq District. The canal alignment extends from the river intake to the tail end of the command area over a total length of approximately **1,150 meters**.

- Intake coordinate: **3.802161° N, 42.535978° E**
- Tail coordinate: **3.808902° N, 42.537505° E**

Topographic surveys confirm that the agricultural land served by the canal lies above the river level, which precludes gravity-fed open canals. The longitudinal profile shows a positive slope of approximately **+0.0029**, confirming that a pressurized pipeline system is technically necessary to convey water to the farms.

All proposed works are confined to the existing irrigation corridor and government-controlled land. No private land acquisition, physical displacement, or economic displacement is anticipated.

Figure 1 shows the Xero-Kowaad Canal alignment, indicating the intake and tail locations and the surrounding command area.



2.3 Scope of Works

The Xero-koowaad sub-project comprises civil, mechanical, and electrical works required to deliver a functional solar-powered pressurized irrigation system. The main activities include:

Construction of a pump house at the riverbank, located approximately 15 meters from the Juba River, to house the solar-powered surface pump and associated mechanical and electrical components.

Supply and installation of a solar photovoltaic system sized to meet irrigation demand, eliminating reliance on diesel fuel and reducing operational costs.

Installation of a DN300 mm HDPE rising main pipeline, approximately 1,150 meters in length, conveying water from the pump house to the distribution tank.

Construction of a reinforced concrete distribution water tank at the highest point of the command area, with a diameter of 3 meters and a height of 3 meters, equipped with two irrigation outlets and one drainage outlet.

Installation of five hydrants along the rising main pipeline to allow controlled water distribution across the farming area.

Associated works including excavation, bedding, pipe jointing, backfilling, compaction, installation of fittings and valves, and site reinstatement.

These works are designed to restore irrigation coverage across the full cultivable command area while minimizing water losses and ensuring efficient operation.

2.3.1 Technical Design Specifications

The solar pumping system will consist of a surface centrifugal pump designed to deliver a discharge of approximately $0.097 \text{ m}^3/\text{s}$ against the calculated total dynamic head derived from elevation difference and friction losses along the 1,150 m rising main. The pump will be coupled with a solar photovoltaic (PV) array sized to meet the daily irrigation demand of approximately $2,258 \text{ m}^3/\text{day}$ over an 8-hour operational window. The solar system will include PV modules mounted on galvanized steel support structures, inverters/controllers, protection panels, and associated electrical cabling.

The rising main pipeline will be DN300 mm HDPE pipe with an appropriate pressure rating (minimum PN10 or higher subject to final hydraulic design), installed at an average burial depth sufficient to protect against mechanical damage and thermal exposure. Air release valves will be installed at high points, and scour valves at low points to allow system flushing and maintenance.

The reinforced concrete distribution tank will be structurally designed to safely store irrigation water and provide gravity-fed distribution. Structural stability, foundation integrity, and load-bearing capacity will be confirmed through engineering calculations in accordance with applicable design standards.

2.3.2 Water Abstraction and Intake Structure

Water will be abstracted directly from the Juba River through a screened intake structure designed to prevent debris and aquatic matter from entering the pump system. The abstraction volume corresponds to the calculated irrigation demand of approximately $2,258 \text{ m}^3/\text{day}$ during peak irrigation periods. This abstraction volume represents a negligible proportion of the Juba River's seasonal flow and is not expected to adversely affect downstream users.

The intake and pump installation will be positioned and constructed to minimize riverbank disturbance. Works near the riverbank will incorporate erosion control measures, and construction activities will be scheduled to avoid peak flood periods where feasible.

2.3.3 Construction Methodology

Pipeline installation will involve controlled excavation along the existing irrigation corridor to the required trench depth and width based on pipe diameter and bedding requirements. Excavated material will be stockpiled separately for reuse during backfilling. Where necessary near the riverbank, temporary dewatering measures will be applied to maintain trench stability.

Pipes will be laid sequentially on prepared bedding material, aligned, jointed according to manufacturer specifications, and pressure tested prior to commissioning. Backfilling and compaction will be conducted immediately after pipe installation to minimize open trench duration.

Construction of the elevated distribution tank will involve reinforced concrete works, including foundation preparation, formwork installation, reinforcement placement, concrete pouring, and curing in accordance with engineering standards. Working-at-height safety measures will be applied during tank construction and solar panel installation.

2.4 Duration and Workforce and Design Capacity and Command Area

Construction of the Xero-koowaad irrigation rehabilitation works is expected to take approximately four to three months, depending on weather conditions, material availability, and site access.

The contractor is expected to engage a workforce comprising both skilled and unskilled labor, including equipment operators, electricians, welders, masons, and general laborers. In line with the S-FSRP Labor Management Procedures, priority will be given to local employment from Luuq District, including youth and vulnerable groups, where feasible.

All workers will be employed under clear contractual terms, provided with appropriate personal protective equipment, and covered by site-specific occupational health and safety measures.

The Xero-koowaad Canal serves a Gross Command Area of approximately 39.2 hectares, of which 31.36 hectares are considered cultivable under improved irrigation conditions. The system is designed to irrigate 80 percent of the gross command area.

Agricultural production within the command area is dominated by banana cultivation, which is the governing crop for irrigation design due to its high-water demand. Irrigation scheduling follows a three-day rotation, with the system operating for eight hours per day, consistent with solar pumping availability.

Key hydraulic design parameters include:

- Daily irrigation demand: approximately 2,258 m³/day
- Design flow rate: approximately 0.097 m³/s
- Total Dynamic Head (TDH): approximately 35.9 meters

These parameters form the basis for pump sizing, pipeline diameter selection, and solar array capacity.

2.5 Machinery and Materials

Construction activities will require standard civil-works machinery, including excavators, tipper trucks, compactors, concrete mixers, and lifting equipment for pipe installation and tank construction.

Primary construction materials include HDPE pipes and fittings, cement, aggregates, reinforcement steel, solar panels, mounting structures, pumps, electrical cabling, and control systems. All materials will be sourced from licensed suppliers and transported to site using existing access routes.

Fuel and lubricants for construction machinery will be stored in designated areas and managed in accordance with environmental and occupational safety requirements. Water required for construction activities such as concrete works and dust suppression will be sourced from approved local supplies and will not interfere with irrigation water use.

2.6 Access and Logistics

Access to the project site is provided through existing roads and rural tracks connecting Luuq town, the riverbank, and surrounding farmland. These routes are currently used by the community and agricultural activities.

Movement of construction machinery and materials may temporarily affect local access along the pipeline alignment. The contractor will coordinate closely with community representatives to minimize disruption, provide alternative access where necessary, and clearly mark work areas using signage and barriers.

All logistics and access arrangements will be implemented in accordance with community health and safety requirements under World Bank Environmental and Social Standard 4.

2.7 Project Beneficiaries

The rehabilitation of the Xero-koowaad irrigation canal will directly benefit farming households cultivating approximately **31.36 hectares** of irrigated land within the command area. Improved irrigation reliability is expected to increase crop yields, stabilize agricultural production, and reduce irrigation costs by eliminating diesel fuel use.

Additional indirect benefits include short-term employment during construction, enhanced water-use efficiency, and strengthened resilience of local livelihoods to climate variability in Luuq District.

3. Environmental and Social Baseline

3.1 Environmental Baseline

Physical Environment

The Xero-koowaad Canal is located along the Juba River corridor in Luuq District, within the arid to semi-arid ecological zone of southern Somalia. The area experiences a hot climate with high daytime temperatures throughout most of the year. Rainfall is bimodal, occurring mainly during the Gu season (April–June) and the Deyr season (October–November), with extended dry periods

during Jilaal (December–March). Annual rainfall is low and variable, increasing the importance of reliable irrigation for agricultural production.

Topographically, the project area is generally flat with gentle gradients. Topographic survey data confirm that the cultivated land served by the Xero-koowaad Canal lies above the river level, necessitating pumped conveyance. Soils along the pipeline alignment are predominantly alluvial sandy-loams and clay-loams, formed through long-term river deposition. These soils are fertile and suitable for irrigated agriculture but are vulnerable to compaction and localized erosion when disturbed during excavation works.

Surface water in the project area is limited to the Juba River, which serves as the sole irrigation source. No permanent wetlands, ponds, or secondary surface water bodies are present along the pipeline alignment or within the command area. Groundwater use is minimal for irrigation and is mainly limited to shallow domestic wells.

Flooding in Luuq District occurs episodically, primarily during extreme rainfall events or upstream releases along the Juba River. While the Xero-koowaad command area is not located within a permanent floodplain, sections near the riverbank may be temporarily affected during high-flow events. The proposed pressurized pipeline system reduces flood-related risks compared to open canals.

Biological Environment

The biological environment along the Xero-koowaad Canal alignment is highly modified due to long-standing agricultural activity and settlement. Natural vegetation has largely been replaced by cultivated crops and degraded shrubland. Dominant vegetation species include *Prosopis Juliflora*, an invasive species widespread across southern Somalia, along with scattered shrubs and grasses adapted to arid conditions.

The ecological value of vegetation within the project footprint is low. Clearance required for pipeline installation and construction of structures will be limited in extent and confined to already disturbed areas. Removal of invasive *Prosopis* is not expected to result in adverse ecological impacts.

Wildlife presence is limited due to human activity. Common fauna includes small reptiles, rodents, and bird species adapted to agricultural landscapes. No protected species, critical habitats, or ecologically sensitive areas have been identified within or near the project area. Nevertheless, standard environmental precautions will be applied during construction, including avoidance of unnecessary vegetation clearance and monitoring for unexpected wildlife encounters.

Air Quality, Noise, and Climate Considerations

Baseline air quality in Luuq District is characterized by low levels of industrial pollution, with dust generation primarily associated with dry-season winds and agricultural activities. Ambient daytime noise levels in rural settings are typically low and influenced by farming activities and occasional vehicular movement. No major sensitive receptors such as hospitals are located within immediate proximity to the construction corridor.

Ambient air quality in the project area is generally good, with localized dust generation occurring during dry periods due to wind and agricultural activities. Construction activities may

temporarily increase dust and noise levels, particularly during excavation, pipe handling, and movement of machinery. These impacts are expected to be short-term, localized, and reversible.

Noise levels are typically low, reflecting the rural setting. Construction-related noise will be limited to daytime hours and managed through equipment maintenance and work scheduling.

Luuq District is highly exposed to climate variability, including recurrent drought events that reduce river discharge and episodic flood events associated with intense rainfall in the upstream basin. Rising temperatures increase evapotranspiration rates, intensifying irrigation demand. These climate characteristics reinforce the importance of resilient irrigation infrastructure capable of operating efficiently under variable hydrological conditions.

The project area is vulnerable to climate variability, including prolonged droughts and episodic floods. The transition from diesel-powered pumping to solar-powered irrigation directly supports climate resilience by reducing greenhouse gas emissions and improving the reliability of water supply under changing climatic conditions.

Water Quality Baseline

While the Juba River provides reliable irrigation water, seasonal variations in turbidity and suspended sediment concentrations occur during peak rainfall periods. Irrigation suitability is generally favorable for banana cultivation; however, water quality parameters such as turbidity, total dissolved solids (TDS), and pH will be verified during project implementation to confirm compatibility with irrigation requirements and to prevent long-term soil salinity risks.

Groundwater

Groundwater within the project area is accessed primarily through shallow domestic wells. Depth to groundwater varies seasonally depending on river stage and rainfall patterns. Construction activities involving excavation will be limited in depth and are not expected to intersect groundwater tables or contaminate local wells. Nevertheless, precautionary measures will be applied to prevent fuel or lubricant infiltration into soils.

3.2 Social Baseline

Socio-Economic Context

Luuq District is a predominantly rural district within Jubaland State, with livelihoods strongly dependent on irrigated agriculture, livestock rearing, and small-scale trade. The Juba River is the backbone of agricultural production in the area, supporting riverine farming systems focused on bananas, maize, vegetables, and legumes.

Within the Xero-koowaad command area, farming households cultivate small to medium-sized plots and rely heavily on irrigation for year-round production. The deterioration of the irrigation system has constrained agricultural output, increased production costs, and reduced household income stability.

Demographic

The Xero-koowaad command area comprises farming households engaged in irrigated agriculture along the Juba River corridor. Households are typically organized in extended family units, with both male and female members contributing to agricultural production. Youth

constitute a significant portion of the labor force, often engaged in farm labor and seasonal activities.

Livelihoods and Agriculture

Agriculture is the primary livelihood activity for households served by the Xero-koowaad Canal. Banana cultivation dominates and requires consistent irrigation throughout the year. Other crops include maize and vegetables grown for household consumption and local markets.

Due to the failure of the existing pipeline and the high cost of diesel pumping, farmers have experienced reduced irrigation coverage and productivity. Some households have resorted to irregular water abstraction or reduced cropping intensity, increasing vulnerability to food insecurity and income shocks.

The rehabilitation of the Xero-koowaad system is therefore critical for restoring agricultural productivity and stabilizing livelihoods.

Community Structure and Governance

Local governance in the project area is characterized by traditional leadership structures, including elders and canal or water user committees that manage water allocation and resolve disputes. These structures operate under the oversight of the Luuq District Administration and the Jubaland State Ministry of Agriculture and Irrigation.

The canal committee plays a central role in coordinating irrigation schedules, maintaining infrastructure, and liaising with government authorities. Engagement with these structures has been integral to project identification and design and will continue during implementation.

Land Tenure Clarification

Land within the irrigation corridor is under government control and historically designated for irrigation use. Farms within the command area are cultivated under customary land tenure arrangements. The rehabilitation works will remain confined to the existing corridor and will not result in physical displacement, economic displacement, or restriction of access to agricultural plots.

Vulnerable Groups and Social Inclusion

Vulnerable groups in the project area include women-headed households, youth, land-poor farmers, minority clans, and persons with disabilities. These groups often face barriers to accessing land, employment, and decision-making processes.

Women contribute significantly to agricultural labor and post-harvest activities but are often underrepresented in formal water management decisions. Youth and land-poor households frequently depend on casual labor for income. The project will seek to promote inclusive participation during consultations and prioritize equitable access to short-term employment opportunities during construction.

Labor Baseline

Local labor availability in Luuq District includes both skilled and unskilled workers with experience in agriculture, masonry, and basic construction activities. Wage levels are locally determined and fluctuate seasonally depending on agricultural demand. The project will

prioritize recruitment of local workers to reduce labor influx risks and enhance community benefits.

Gender Considerations and SEA/SH Risks

Gender norms in Luuq District influence access to resources and participation in decision-making. While women play a key role in farming and household water management, they may have limited influence over irrigation infrastructure management.

Construction activities involving an external workforce may introduce low to moderate risks of sexual exploitation, abuse, or harassment (SEA/SH) if not properly managed. These risks will be addressed through enforcement of worker codes of conduct, awareness training, confidential grievance mechanisms, and alignment with the S-FSRP SEA/SH Prevention and Response measures.

Although reported SEA/SH risks in rural Luuq are generally low, vulnerability may increase where external workers interact with local communities. Survivor-centered grievance pathways and confidential reporting mechanisms will be emphasized. Awareness sessions will be conducted to inform communities of reporting channels and available support services.

Health, Safety, and Security Context

The security situation in Luuq District is generally stable but remains fragile, reflecting broader regional dynamics in southern Somalia. The project area is accessible for development activities, though periodic security incidents in surrounding areas necessitate vigilance and coordination with local authorities.

Community health and safety risks are primarily associated with construction activities, including open trenches, moving machinery, and temporary access restrictions. These risks will be mitigated through site control measures, clear signage, community awareness, and coordination with local leaders.

Cultural Heritage

No known cultural, historical, or archaeological sites have been identified along the Xero-koowaad Canal alignment or within the command area. Nevertheless, a Chance Finds Procedure will be applied during excavation works to manage any unexpected discoveries in accordance with national regulations and World Bank requirements.

4. Legal and Regulatory Framework

The relevant national environmental and social legislation, as well as the WB Environmental and Social Framework (ESF) under which the (S-FSRP) is financed will guide the implementation of this Environmental and Social Management Plan (ESMP) for the Subproject. Together, these frameworks ensure that project activities are carried out in a manner that safeguards the environment, promotes social inclusion, and upholds the principles of sustainability and accountability.

4.1 National Legal and Institutional Framework

The provisional Constitution of Somalia:

Article 10 – Human Dignity: Human dignity is the basis for all human rights. It is inviolable and must be protected by all. The State power must not be exercised in a manner that violates human dignity.

Article 11 – Equality: All citizens, regardless of sex, religion, social or economic status, political opinion, clan, disability, occupation, birth or dialect shall have equal rights and duties before the law. The State must not discriminate against any person on the basis of age, race, color, tribe, ethnicity, culture, dialect, gender, birth, disability, religion, political opinion, occupation, or wealth. Thus, all laws, or political and administrative actions that are designed to achieve full equality for individuals or groups who are disadvantaged, or have suffered from discrimination in the past, shall be deemed to be not discriminatory.

Article 24 – Labor Relations: Every person has the right to fair labor relations. All workers, particularly women, have a special right of protection from sexual abuse, segregation and discrimination in the workplace and, every labor law and practice shall comply with gender equality in the workplace.

Article 31 – Language and Culture: The state shall promote the positive traditions and cultural practices, whilst striving to eliminate customs and emerging practices, which negatively impact the unity, civilization and wellbeing of the Somali society and the state shall promote the cultural practices and local dialects of minorities.

Article 32 – Right of Access to Information: Every person has the right of access to information held by the state, and the right of access to any information that is held by another person which is required for the exercise or protection of any other just right.

Article 27 (1 & 5) – Economic and social rights- right to clean portable water. Women, aged, disabled, and minorities who have suffered discrimination to be supported to realize their full potential.

Article 43 Land: land is recognized as primary resource and the basis of the people’s livelihood; b) land shall be held, used and managed in an equitable, efficient, productive and sustainable manner; c) the FGS shall develop a national land policy, which shall be subject to constant review, d) no permit may be granted regarding the permanent use of any portion of the land, sea or air of the territory of the Federal Republic of Somalia, e) the FGS, in consultation with the FMS and other stakeholders, shall regulate land policy, and land control and use measures.

Article 111J – The Office of the Ombudsman: The office is protected against interference from any other person or entity. As such, independence, integrity and effective service delivery are also maintained. The Ombudsman shall: (i) Investigate complaints against government workers regarding: allegations/ outright violations concerning basic rights and freedom, abuse of power, unfair behavior, mercilessness, lack of clemency, indiscipline or disrespect, corruptive act, illegal behavior, or those that could lead to mischief or injustice; (ii) Investigate complaints in relation to the activities of the Public Service Commission and other administrative institutions of the government, including defense and police forces that could lead to unequal services, unfair recruitment, or administration; (iii) Take appropriate steps to rectify or change items mentioned in earlier clauses through a fair, and appropriate process of consultations and sacrifices among the people concerned; (iv) Report on the complaints and issues raised and submit to the head of the offender; (v) Forward cases to the Attorney General and bring them before a court, as appropriate.

Article 111H – National Security Commission: A National Security Commission shall be established to study and develop an integrated security framework to address present and future needs of Somalia. It shall present proposals to ensure that human security is prioritized and incorporated into such a framework, through which the public may provide oversight and monitor security related expenditure and seek redress from abuses by security personnel.

Article 45 (–Environment||) states that the government shall give priority to the protection, conservation, and preservation of the environment against anything that may cause harm to natural biodiversity and the ecosystem. Furthermore, all people have a duty to safeguards and enhance the environment and participate in the development, execution, management, conservation and protection of the natural resources and the environment. The FGS and the governments of the FMS affected by environmental damage shall take urgent measures to clean up hazardous waste dumped on the land or in the waters of the FGS; take necessary measures to reverse desertification, deforestation and environmental degradation, and to conserve the environment and prevent activities that damage the natural resources and the environment of the nation, among other measures.

Article 115 (–Civil service||) outlines civil service values and protection of their rights
Constitution:

4.2. Relevant National legislation

Environmental Protection and Management Act (April 2024), National Health Professionals Council Act (LR. 31/2020) and Law No. 9 of 26 January 1989; Draft National Environmental and Social Impact Assessment Regulations; Draft National Ozone Layer Protection Regulation; Draft National Forest Management Policy; and Draft National Charcoal Policy. All of these have some relevance, in one way or another, with the FSRP Project as well as the Construction Permits Act (2022).

Environmental Protection and Management Act, 2024: The act guarantees the right to a clean, safe and healthy environment, provides requirements for waste management including hazardous wastes. The act requires the application of the polluter pay and precautionary principle in environment management. The construction project is required to adhere to all the relevant requirements prescribed by the act.

Environmental and Social Impact Assessment and Audit Regulations (ESIA) 2024: Part III, regulations 13, 16 and 17, guides public participation, collection and incorporation of views from the public.

the Somali Labour Code (Law No. 36 of 2024), the Public Health legislation, Somalia National Gender Policy (2016) includes strategies to eradicate harmful traditional practices such as female genital mutilation/cutting (FGM/C) and child marriage and to improve services for the management of GBV/SEAH cases.

Institutionally, environmental and social management responsibilities will be shared among several entities. The Federal Ministry of Agriculture and Irrigation (MoAI) provides overall oversight and national environmental policy and regulation while FAO Somalia will supervise day-to-day implementation and safeguards compliance. Additionally, The State MoAI facilitates local coordination, security, and grievance management. Collectively, these institutions will ensure compliance with Somalia’s environmental and social laws throughout the project cycle.

4.3 The World Bank Environmental and Social Framework (ESF)

As the Subproject is classified as having a "Moderate" environmental and social risk, a full Environmental Impact Assessment (EIA) is not required. This site-specific **Environmental and Social Management Plan (ESMP)** will serve as the primary instrument for identifying, assessing, and managing all potential risks and impacts.

In the absence of specific Somali national standards for air quality, water quality, or noise, or where such standards are less stringent, the project will adhere to internationally recognized benchmarks, including the WB ESF, **World Bank Group’s General EHS Guidelines** and, where applicable, **World Health Organization (WHO)** standards. These standards will guide all management and monitoring activities throughout the project lifecycle.

World Bank Environmental and Social Framework (ESF): The following Environmental and Social Standards (ESSs) are relevant to this project.

Table 1: Summary of Potential Environmental and Social Risks

ESS	Specific Relevancy (Risks Only)
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	<ul style="list-style-type: none"> - Addresses the risk of soil erosion and embankment instability during excavation. - Addresses the risk of hydrological disruptions such as turbidity, backflow, and sedimentation in the canal system. - Addresses the risk of temporary interruption of irrigation flows to farmers during works. - Addresses the risk of cumulative impacts arising from seasonal river changes combined with canal rehabilitation activities. - Addresses the risk of water-use conflicts among farmers during periods of reduced or altered flows (rehabilitation phase) - Addresses the risk of weak ESMP/C-ESMP implementation on site.

	<ul style="list-style-type: none"> - Addresses the risk of poor coordination between the Contractor, FAO, NPCU, and State PIU leading to unmanaged impacts. - Addresses the risk of inadequate monitoring and delayed reporting of environmental and social issues.
ESS2: Labor and Working Conditions	<ul style="list-style-type: none"> - Addresses the risk of child labor or forced labor due to weak verification of worker age or recruitment practices. - Addresses the risk of unfair or non-transparent recruitment, including exclusion of women, youth, and vulnerable groups. - Addresses the risk of delayed payment of wages and related labor disputes. - Addresses the risk of workers having no written contracts or unclear employment terms. - Addresses the risk of injuries from machinery, open excavations, and unstable canal banks. - Addresses the risk of exposure to excessive noise, vibration, heat stress, and dehydration. - Addresses the risk of inadequate PPE provision or inconsistent use by workers. - Addresses the risk of poor site layout and unsafe internal access paths. - Addresses the risk of poor implementation of the LMP and the absence or weakness of a confidential worker GM. - Addresses the risk of limited OHS incident reporting, no Root Cause Analysis, and poor record-keeping of hours, incidents, and contracts.
ESS3: Resource Efficiency and Pollution Prevention and Management	<ul style="list-style-type: none"> - Addresses the risk of dust emissions from excavation, vehicle movement, and dry soil surfaces. - Addresses the risk of noise and vibration affecting nearby households and farm users, even if impacts are minor in a rural agropastoral setting. - Addresses the risk of air emissions (smoke, diesel fumes) from poorly maintained machinery, even if overall impacts are limited. - Addresses the risk of fuel and oil spills contaminating soil and canal water. - Addresses the risk of increased turbidity and sediment loads in irrigation canals and drainage channels. - Addresses the risk of accumulation of construction debris and vegetation waste along the canal. - Addresses the risk of inadequate waste segregation, including hazardous versus non-hazardous materials. - Addresses the risk of waste disposal in unauthorized locations and community exposure to unsafe waste piles. - Addresses the risk of erosion and sedimentation affecting river/canal systems.
ESS4: Community Health, Safety, and Security	<ul style="list-style-type: none"> - Addresses the risk of community members being exposed to construction hazards such as machinery, trucks, and open excavations.

	<ul style="list-style-type: none"> - Addresses the risk of unsafe access around auxiliary structures (crossing culverts, division boxes, intakes) and unstable canal banks. - Addresses the risk to children walking near the works or along farm paths adjacent to the canal. - Addresses the risk of misconduct, intimidation, or abuse by security personnel if used. - Addresses the risk of tension or conflict between hired guards and local communities. - Addresses the risk of harmful inward migration or labor influx due to perceived project benefits. - Addresses the risk of friction between villages over canal access, water distribution, or workforce selection. - Addresses the risk of increased traffic from machinery, trucks, and service vehicles causing accidents involving farmers, children, and livestock. - Addresses the risk of accidents at blind spots, turning points, or informal crossings used by communities.
ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	<ul style="list-style-type: none"> - ESS5 is not triggered because the canal lies fully within existing public land owned by the Government (<i>as confirmed in Annex 4</i>). - Addresses only temporary risks such as short-term disruption of access to canal banks and footpaths during excavation. - Addresses the risk of farmers temporarily finding it difficult to reach farms, water points, or division boxes during works. - Addresses the risk of perceived unfairness in water distribution during rehabilitation activities. - Addresses the risk of misunderstandings about boundaries or right-of-way if the work area is not clearly demarcated.
ESS6: Biodiversity Conservation	<ul style="list-style-type: none"> - Addresses the risk of minor vegetation clearance along canal banks beyond what is strictly necessary for works. - Addresses the risk of temporary disturbance to livestock and small fauna that use canal corridors for movement or watering. - Addresses the risk of short-term alteration of micro-habitats during excavation and spoil placement. - Confirms that no sensitive species or critical habitats were identified, but acknowledges localized, reversible impacts on common species and grazing areas.
ESS8: Cultural Heritage	<ul style="list-style-type: none"> - Addresses the risk of chance finds of cultural or historical materials during excavation (e.g., pottery, graves, artifacts). - Addresses the risk of damaging culturally important trees, markers, or unrecorded burial sites. - Addresses the risk of community conflict if cultural heritage is discovered and not reported or managed appropriately.
ESS10: Stakeholder Engagement and Information Disclosure	<ul style="list-style-type: none"> - Addresses the risk of excluding women, youth, minority groups, and vulnerable households from consultations and project decision-making.

	<ul style="list-style-type: none"> - Addresses the risk of poor communication leading to confusion about project objectives, benefits, and construction schedules. - Addresses the risk of insufficient information disclosure on temporary water disruptions, access restrictions, and safety risks. - Addresses the risk of low awareness or poor access to the GM, resulting in unresolved grievances. - Addresses the risk of weak coordination and miscommunication between MoAI-FGS, Jubaland MoAI, district authorities, FAO, and community leaders.
<p>SEA/SH – Sexual Exploitation, Abuse, and Harassment (Cross-cutting: ESS1, ESS2, ESS4, ESS10)</p>	<ul style="list-style-type: none"> - Addresses the risk of SEA/SH incidents involving workers and community members, particularly women and girls. - Addresses the risk of increased vulnerability to SEA/SH due to worker–community interaction around the project area. - Addresses the risk of underreporting of SEA/SH due to stigma, fear of retaliation, or lack of confidential reporting channels. - Addresses the risk of misconduct by security personnel or project workers that could lead to exploitation, abuse, or harassment.

World Bank Group EHS Guidelines: The project will adhere to the WBG's General Environmental, Health, and Safety (EHS) Guidelines (EHSGs). The Subproject's commitment to adhering to the World Bank Group's General Environmental, Health, and Safety (EHS) Guidelines is a cornerstone of its risk management strategy. These guidelines are technical reference documents that define **Good International Industry Practice (GIIP)** for managing EHS issues in a sustainable manner.

For this civil works project, they are critically important as they provide a practical and authoritative framework for implementing effective mitigation measures related to **Occupational Health and Safety** (e.g., use of PPE, site safety protocols), **Community Health and Safety** (e.g., site security, traffic management), and **Environmental Pollution Control** (e.g., managing dust, noise, and waste) during construction and operation. Their application ensures the Subproject is implemented to a high standard of safety and environmental stewardship. In cases where Somali regulations and World Bank policies differ, the World Bank Standards will prevail and will be applied. This ESMP, along with the associated plans, S-FSRP Frameworks, and Manuals (ESMF, RPF, IPMP, LMP, WMP, GM, SEP, etc.), is legally binding on the contractor. The Contractor is required to prepare their C-ESMP upon signing the work contract and before commencing work. This preparation is based on the proposed management framework of this document (ESMP), the World Bank Environmental and Social Framework (ESF), and the Good International Industry Practice (GIIP) included in the EHSGs.

Detailed gap analysis has been developed with the project approved ESMF, refer to the following link: https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099101123104521377/p1778160d5cf1003093810fb7fa9629a42?utm_source=chatgpt.com

5. Environmental and Social Risks and Impacts

Overview

Environmental and social screening of the Xero-koowaad irrigation rehabilitation sub-project determined that the activity presents a Moderate level of environmental and social risk. The anticipated impacts are site-specific, temporary, largely reversible, and manageable through the application of standard mitigation measures in accordance with Good International Industry Practice and the World Bank Environmental and Social Framework.

The rehabilitation of the Xero-koowaad Canal is expected to generate substantial long-term environmental and socio-economic benefits by restoring reliable irrigation services, reducing operational costs, and strengthening agricultural livelihoods. However, as with all civil works involving excavation, pipeline installation, solar pumping infrastructure, and the presence of a construction workforce, a number of short-term risks may arise during the construction phase. This section provides an overview of both the positive impacts and the potential adverse risks associated with the sub-project.

5.1 Positive Impacts

The rehabilitation of the Xero-koowaad irrigation system is expected to deliver significant positive outcomes for farmers and the wider community in Luuq District.

Restoration of irrigation services will enable reliable water delivery to approximately 31.36 hectares of cultivable land, improving crop productivity and stabilizing agricultural production. Consistent access to irrigation water is particularly critical for banana cultivation, which dominates the command area and requires year-round water supply.

The transition from diesel-powered pumping to a solar-powered irrigation system will substantially reduce operating costs for farmers. This shift will also lower greenhouse gas emissions, reduce local air pollution, and enhance the environmental sustainability of the irrigation scheme.

Improved conveyance efficiency through a pressurized HDPE pipeline will minimize water losses from leakage and seepage, ensuring more equitable water distribution across the command area, including downstream farms that have historically received inadequate supply.

Construction activities will create short-term employment opportunities for skilled and unskilled labor, with a preference for local workers from Luuq District. This will contribute to household incomes and strengthen community ownership of the project.

The rehabilitation will also strengthen local water management structures by reinforcing the role of the canal committee in water allocation, operation, and maintenance, contributing to long-term sustainability and reduced conflict over water resources.

5.2 Potential Negative Impacts

Although overwhelmingly beneficial, the subproject may generate localized and temporary negative impacts during construction. These impacts are moderate, site-specific, reversible, and can be effectively managed through the mitigation measures outlined in this ESMP.

Potential Negative Environmental Impacts

During construction, excavation for pipeline installation, pump house construction, and tank foundations may result in temporary soil disturbance, compaction, and localized erosion if not properly managed. These impacts are expected to be minor and confined to the immediate work areas. Beyond trench-level disturbance, there is a risk of subsurface erosion or settlement if backfilling and compaction are not properly executed. Exposed soils during dry seasons may also be vulnerable to wind erosion. Inadequate spoil management could contribute to localized land degradation or blockage of drainage paths.

Dust generation may occur during trenching, backfilling, and movement of vehicles and machinery along unpaved access routes, particularly during dry periods. Construction equipment may also generate temporary noise and vibration, affecting nearby farms and households.

Improper handling of construction materials, fuel, lubricants, or waste could result in localized soil contamination or pollution of the riverbank area if mitigation measures are not applied. Generation of construction waste, including excavated spoil, damaged pipes, packaging materials, and concrete debris, may pose environmental risks if disposed of in unauthorized locations.

Construction Wastewater Risk: Construction wastewater generated from concrete mixing, equipment washing, or accidental runoff may pose localized contamination risks if discharged directly onto soils or near the riverbank without control measures.

Biodiversity and Ecosystem Considerations: Although the project footprint is located within a modified agricultural landscape, minor risks remain. Disturbance of riparian vegetation near the intake could reduce localized bank stabilization if not carefully managed. Elevated tank construction and solar panel installation may temporarily disturb bird species utilizing nearby trees or structures. Movement of livestock across agricultural fields may be temporarily disrupted by open trenches, potentially leading to injury or conflict if safe crossings are not maintained. Excavated soil containing *Prosopis* seeds may unintentionally facilitate further spread of this invasive species if spoil is improperly disposed of.

Vegetation clearance will be limited and confined to already disturbed agricultural land and degraded shrubland. No significant impacts on biodiversity or natural habitats are anticipated.

Water Resources and Riverbank Stability Risks: Construction activities near the Juba River intake may generate localized turbidity and sedimentation if excavation materials are not properly controlled. Accidental fuel or lubricant spills from machinery operating near the riverbank could also pose contamination risks. Although the daily abstraction volume represents a small proportion of total river discharge, cumulative abstraction impacts during low-flow periods could potentially affect downstream users if not properly managed. Additionally, localized disturbance of the riverbank during intake construction may increase short-term erosion risks if stabilization measures are not applied.

Potential Negative Social Impacts

Construction activities may temporarily disrupt access to farms, footpaths, and irrigation routes where the pipeline alignment intersects community movement corridors. If unmanaged, these disruptions could affect daily agricultural activities and livelihoods. **Temporary Access & ESS5 Disruption Risk:** Although no land acquisition is anticipated, temporary restrictions of access to farms, irrigation routes, or footpaths during excavation may result in short-term livelihood

disruptions. Delays in restoring access or miscommunication regarding irrigation scheduling during construction could create conflicts among water users.

Occupational health and safety risks are associated with excavation works, open trenches, pipe handling, and operation of machinery. Without adequate controls, workers could be exposed to injuries, heat stress, or accidents. Trench Safety Risks; Excavation works for the DN450 mm pipeline may create trench collapse hazards, particularly in sandy or loose alluvial soils. Without proper sloping, benching, or shoring systems, workers could face serious injury risks. Daily inspection of excavation sites will therefore be required. Construction of the elevated reinforced concrete tank and installation of solar panel mounting structures will involve working at height, creating fall risks for workers. These activities require fall protection systems, guardrails, harnesses, and trained personnel. Given the high ambient temperatures in Luuq District, workers are exposed to heat stress and dehydration risks. Prolonged exposure during peak daytime hours may increase accident likelihood. Work-rest cycles, shaded rest areas, and provision of potable water will be mandatory. Installation of the solar photovoltaic system, inverters, and pump electrical connections introduces electrical hazards during wiring, testing, and commissioning. Improper lifting or installation of mechanical equipment may also result in crush or lifting-related injuries. Handling of fuels, lubricants, paints, solvents, and potential battery components (if applicable) presents localized hazardous material risks requiring controlled storage, spill prevention, and safe disposal procedures.

Community health and safety risks may arise from the presence of construction machinery, open excavations, and increased vehicle movement, particularly for children and livestock moving near the work sites. Open trenches may pose fall hazards to children, elderly individuals, and livestock if not properly barricaded. Increased truck movement transporting pipes and materials may elevate the risk of traffic accidents along shared rural access roads. Night-time works, if required, may introduce additional visibility and safety risks unless adequate lighting and site control measures are implemented.

Labor-related risks include potential grievances related to recruitment practices, wage payments, or working conditions if Labor Management Procedures are not properly implemented. While the project intends to prioritize local employment, the potential engagement of skilled workers from outside Luuq District may introduce limited labor influx risks, including pressure on local services, temporary accommodation challenges, and possible social tensions if not properly managed through community communication and worker codes of conduct.

Although the workforce size is expected to be moderate, interaction between workers and local communities may introduce low to moderate risks of sexual exploitation, abuse, or harassment (SEA/SH), particularly affecting women and vulnerable groups, if not adequately managed.

Women farmers may experience disproportionate impacts if temporary irrigation interruptions occur during critical crop growth stages. Additionally, exclusion of women from consultation processes regarding construction timing or access arrangements could reduce equitable participation in project benefits.

Climate & Long-Term Impacts (ESS1 Requirement)

Climate Construction Risk

Extreme rainfall events during the construction period could flood trenches or delay works, increasing erosion and safety risks. Conversely, extreme heat may affect construction scheduling, worker productivity, and material performance.

Long-Term Operational Risks

Long-term operational risks may include potential soil salinity accumulation if irrigation scheduling is not properly managed, structural failure of the elevated tank if maintenance is neglected, or overflow risks during high-demand periods.

Cumulative Impact

Cumulative impacts may arise if multiple irrigation rehabilitation projects abstract water from the same river reach without coordinated management. Although individual abstraction volumes are small, aggregated withdrawals during drought conditions could increase pressure on downstream users.

Environmental impacts may have indirect social consequences. For example, excessive dust generation could contribute to respiratory discomfort among nearby households. Noise during prayer times may disrupt community activities. Poor waste management could generate grievances or undermine community trust in project implementation.

5.3 Risk Assessment and Significance Ranking

Environmental and social risks were assessed using a qualitative risk matrix based on likelihood (Low, Medium, High) and consequence (Minor, Moderate, Major). Residual risk after mitigation was evaluated to confirm alignment with the Moderate Risk classification.

High-consequence risks identified include trench collapse, working at height, and potential river contamination during intake works. With implementation of prescribed mitigation measures, these risks are reduced to Low or Moderate residual levels.

No High residual risks are anticipated following implementation of ESMP measures.

6. Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) provides a structured framework for managing environmental and social risks identified under Section 5 in accordance with ESS1–ESS10 of the World Bank Environmental and Social Framework. The ESMP translates identified risks into specific, measurable mitigation and monitoring actions, assigns institutional responsibilities (Contractor, PIU, FAO, MoAI-FGS), defines implementation timelines, and links each mitigation measure to corresponding budget allocations. The ESMP will be operationalized through a Contractor Environmental and Social Management Plan (C-ESMP), which must be approved prior to commencement of works. The table 3 below summarizes the key risks and the corresponding mitigation measures for each applicable ESS.

Table 2: Environmental & Social Mitigation Plan

Risks / Impacts	Mitigation Measures	Methods / Tools / Resources	Responsibility	Project Phase	Timeline / Frequency	Mitigation Budget
<i>ESS1 – Assessment and Management of Environmental and Social Risks and Impacts</i>						
<p>A. Environmental Risks:</p> <ul style="list-style-type: none"> - Soil erosion & embankment instability during excavation; - Hydrological disruptions (turbidity, backflow, sedimentation); - Temporary interruption of irrigation flow; - Cumulative impacts from seasonal river changes. <p>B. Social Risks:</p> <ul style="list-style-type: none"> - Water-use conflicts among farmers; <p>C. Administrative Risks:</p> <ul style="list-style-type: none"> - Weak ESMP/C-ESMP implementation; - Poor coordination between Contractor, FAO, NPCU & PIU; - Inadequate monitoring & delayed reporting. 	<p>A. Environmental:</p> <ul style="list-style-type: none"> - Fully implement ESMP & C-ESMP; - Stabilize canal banks & excavated areas immediately; - Schedule works outside peak river periods/rains.; - Provide temporary water diversion to maintain irrigation; - Daily inspection of embankment and erosion-sensitive areas <p>B. Social:</p> <ul style="list-style-type: none"> - Conduct conflict mapping prior to works; - Transparent targeting of vulnerable/marginalized groups; - Maintain daily communication with WUCs; - Use GM to record/resolve grievances; - Coordinate water distribution schedules. <p>C. Administrative:</p> <ul style="list-style-type: none"> - Weekly FAO supervision + non-compliance notices; - Contractor keeps daily logs & ESMP checklists; - Monthly E&S refresher training for workers; 	<ul style="list-style-type: none"> - ESMP & C-ESMP - Sediment/flow control tools - FAO inspection checklists - Conflict mapping tools; - GM logs & communication sheets 	<ul style="list-style-type: none"> - Contractor (primary) - FAO Supervising Engineer - NPCU – MoAI (oversight) - Jubaland State PIU (coordination) 	<p>Construction</p>	<ul style="list-style-type: none"> - Daily inspection (Contractor); - Weekly supervision (FAO SE) - Continuous during critical works 	<ul style="list-style-type: none"> - Included in contract price; - Included in FAO supervision & management budget

	- Strengthen C-ESMP using FAO TA tools/templates.					
<i>ESS2 – Labor and Working Conditions</i>						
<p><i>A. Labor Risks:</i></p> <ul style="list-style-type: none"> - Risk of child labor or forced labor; - Unfair recruitment practices and exclusion of women, youth, and vulnerable groups; - Delayed payment of wages leading to disputes; - Lack of written contracts and unclear employment terms. <p><i>B. Occupational Health & Safety (OHS) Risks:</i></p> <ul style="list-style-type: none"> - Injuries from machinery, open excavations, unstable banks; - Exposure to excessive noise and vibration; - Heat stress, dehydration, and unsafe working hours; - Lack of PPE and inconsistent use; - Poor site layout and unsafe access paths. <p><i>C. Administrative and Compliance Risks:</i></p> <ul style="list-style-type: none"> - Poor implementation of Labor Management Procedures (LMP); - No worker GM or weak confidential reporting system; 	<p><i>A. Labor Standards:</i></p> <ul style="list-style-type: none"> - Implement the project’s LMP in full; - Verify worker ages (18+ only); - Establish and publicize a confidential worker GM; - Promote inclusion of women, youth and minority groups; - Communicate payment schedules clearly to avoid disputes. <p><i>B. Occupational Health & Safety:</i></p> <ul style="list-style-type: none"> - Provide full PPE (helmets, gloves, boots, reflective vests, ear protection); - Conduct daily toolbox talks and weekly OHS sessions; - Provide clean drinking water, shaded rest areas, and sanitation facilities; - Implement heat-stress management (adjust shifts, rest breaks); - Train machinery operators and enforce licensing requirements; - Conduct Safety Risk Assessments and update site layout; 	<ul style="list-style-type: none"> - Labor Management Procedures (LMP); - Code of Conduct (CoC); - Worker GM tools; - PPE sets; - OHS toolbox talk templates; - Accident/incident logs; - Payment monitoring tools; - Safety Risk Assessment forms; - Training attendance registers 	<ul style="list-style-type: none"> - Contractor (primary implementer); - FAO Technical Assistance team (training, oversight); - FAO Supervising Engineer (verification) - NPCU – MoAI (labor compliance oversight); - Jubaland State PIU (worker engagement/support) 	Construction & Operation	<ul style="list-style-type: none"> - Daily OHS toolbox talks; - Weekly OHS inspections by contractor; - Weekly FAO supervision - Monthly labor audits 	<ul style="list-style-type: none"> - Included in contract price - Supported under FAO supervision budget; - Included in MoAI operational costs

<ul style="list-style-type: none"> - Lack of OHS incident reporting, RCAs, and training; Labor standards not aligned with national laws or EHSs; - Inadequate record-keeping (hours worked, incidents, contracts). 	<ul style="list-style-type: none"> - Keep accident and near-miss logs and conduct Root Cause Analysis (RCA); <i>C. Administrative Measures:</i> - Monthly refresher training for all workers; - Maintain up-to-date labor registers, GM records, OHS logs; - Enforce Code of Conduct (CoC) for all workers with clear penalties; - Continuous supervision by FAO to ensure compliance. 					
<i>ESS3 – Resource Efficiency and Pollution Prevention</i>						
<p><i>A. Pollution Risks:</i></p> <ul style="list-style-type: none"> - Dust emissions from excavation, vehicle movement, dry soils; - Noise and vibration from machinery and equipment (minor since the subproject site locates a ruler agropastoral setting); - Air emissions (smoke, diesel fumes) from poorly maintained machinery (negligible); - Fuel and oil spills contaminating soil and water sources; - Increased turbidity in irrigation canals and drainage channels <p><i>B. Waste Management Risks:</i></p>	<p><i>A. Pollution Control:</i></p> <ul style="list-style-type: none"> - Use water sprinklers to suppress dust on required access roads and work sites; - Maintain vehicles and machinery regularly (oil change, tuning, filter replacement); - Limit noisy activities to daytime hours and notify nearby households; - Store fuel/oil in banded, labeled containers away from waterways; - Keep spill kits on site and train workers on their use; <p><i>B. Waste Management:</i></p> <ul style="list-style-type: none"> - Implement Waste Management Plan (WMP); - Clearly label waste bins: general waste, hazardous waste, organic waste; 	<ul style="list-style-type: none"> - Waste Management Plan (WMP); - Water truck / sprinklers; - Fuel/oil bunds; - Spill kits; - Water testing kits (TDS, TSS); - Training materials 	<ul style="list-style-type: none"> - Contractor (primary implementer) - FAO Supervising Engineer (verification); - NPCU – MoAI (oversight); - Jubaland State PIU (coordination & local enforcement) 	<p>Construction & early operation</p>	<ul style="list-style-type: none"> - Daily pollution checks; - Weekly waste & fuel inspections; - Monthly reporting by contractor; - Continuous monitoring during excavation & earthworks 	<ul style="list-style-type: none"> - Included in contract prize; - Included in FAO supervision budget

<ul style="list-style-type: none"> - Accumulation of construction debris and vegetation waste; - Lack of proper waste segregation (hazardous vs non-hazardous); - Disposal of waste in unauthorized locations; - Community exposure to unsafe waste piles; <p><i>C. Water & Soil Quality Risks:</i></p> <ul style="list-style-type: none"> - Erosion and sedimentation entering river/canal systems (low); - High Total Dissolved Solids (TDS) water used for irrigation causing soil salinization; - Increased Total Suspended Solids (TSS) in canal water; - Contamination of shallow water sources; 	<ul style="list-style-type: none"> - Identify authorized disposal sites in collaboration with WUC & State MoAI; - Remove debris regularly and ensure safe transport to disposal sites; - Prohibit burning of waste; <p><i>C. Water & Soil Quality Safeguards:</i></p> <ul style="list-style-type: none"> - Minimize vegetation disturbance to avoid exposed soils. - Install erosion control measures (brush barriers, silt fences were required); - Conduct TDS/TSS analysis before allowing irrigation water use; - Avoid using water with TDS > 1,500 ppm for irrigation; - Monitor turbidity during excavation near water inlets. 					
<i>ESS4 – Community Health, Safety, and Security</i>						
<p><i>A. Community Health & Safety Risks:</i></p> <ul style="list-style-type: none"> - Exposure to construction hazards (machinery, trucks, excavations); - Unsafe access around open trenches, axillary structures (crossing culverts, division boxes & intake reconcentration/rehab 	<p><i>A. Community Health & Safety Measures:</i></p> <ul style="list-style-type: none"> - Install robust fencing, barriers, and warning signage around all hazardous zones; - Restrict unauthorized entry into the construction area except for workers; - Conduct community awareness sessions on 	<ul style="list-style-type: none"> - Security Management Plan (SMP); - Traffic Management Plan (TMP); - Fencing, barriers & signage; - Debris removal procedures; - EHSg safety guidelines; 	<ul style="list-style-type: none"> - Contractor (primary implementer); - FAO Supervising Engineer (verification & compliance enforcement); - FAO Technical Assistance (training & oversight); 	Construction	<ul style="list-style-type: none"> - Daily safety checks (Contractor); - Weekly FAO supervision; - Monthly security reviews; - Continuous community sensitization 	<ul style="list-style-type: none"> - Included in contractor's BoQ; - Included in project management & FAO supervision budget

<p>specified sites) and unstable canal banks;</p> <ul style="list-style-type: none"> - Child safety risks when children walk near the site or along farm paths; <p><i>B. Security Risks:</i></p> <ul style="list-style-type: none"> - Misconduct, intimidation, or abuse by security personnel; - Tension or conflict between hired guards and communities; - Excessive or disproportionate security practices. <p><i>C. Fragility, Conflict & Social Tension Risks:</i></p> <ul style="list-style-type: none"> - Harmful inward migration driven by perceived project benefits; - Community dynamics disrupted by labor influx; - Clashes or friction between villages over canal access, water distribution, or workforce selection; <p><i>D. Traffic and Road Safety Risks:</i></p> <ul style="list-style-type: none"> - Increased traffic from machinery, trucks, and service vehicles; - Accidents involving children, livestock, or farmers using the same paths; - Unsafe turning points, blind spots, and 	<p>construction risks, especially targeting women, youth, and farmers;</p> <ul style="list-style-type: none"> - Provide safe and clearly marked temporary access routes including footpaths, vehicle bypasses, and pedestrian crossings around all work areas involving culverts, intakes, sluice gates, division boxes, and excavated sections of the canal; - Remove debris regularly following EHS guidelines; <p><i>B. Security Management Measures:</i></p> <ul style="list-style-type: none"> - Implement and monitor the Security Management Plan (SMP); - Hire the security guards from the local community & train human rights, respectful engagement, and proportional use of force to avoid conflicts; - Require guards to sign and comply with a Security Code of Conduct; <p><i>C. Fragility & Social Risk Mitigation:</i></p> <ul style="list-style-type: none"> - Base targeting decisions on FINA findings and transparent vulnerability criteria; - Conduct consultations with local authorities, village 	<ul style="list-style-type: none"> - GM system (including security channel); - Training materials (security, GBV, community safety); - Community awareness materials 	<ul style="list-style-type: none"> - Jubaland State PIU (community coordination); - WUC (local communication) 			
---	--	---	---	--	--	--

<p>unregulated movement of heavy equipment.</p>	<p>elders and WUCs/Canal Committee to reduce tension;</p> <ul style="list-style-type: none"> - Track population influx risks and adjust site management plans accordingly; - Provide clear communication on project benefits and eligibility. <p><i>D. Traffic and Road Safety Controls:</i></p> <ul style="list-style-type: none"> - Develop and implement a Traffic Management Plan (TMP); - Enforce strict speed limits around work zones; - Install traffic warning signs at key points used by pedestrians, trucks and livestock; - Train vehicle operators and road workers on safety risks; - Maintain access routes clear and safe for community use. 					
<p><i>ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement</i></p>						
<p>- ESS5 is not triggered. The canal lies fully within existing public land owned by the Government, as confirmed in <i>Annex 4 – Land Ownership Confirmation Letter</i>. No land acquisition, displacement, or loss of assets is required.</p>	<ul style="list-style-type: none"> - Maintain open community access routes and farm paths wherever possible; - Use temporary bypass paths and clearly mark safe pedestrian areas; - Provide advance notice (48–72 hours) before temporary flow interruptions or access restrictions; 	<ul style="list-style-type: none"> - Consultation records; - Access route signage; - WUC/Canal Committee coordination logs - GM system 	<ul style="list-style-type: none"> - Contractor (implementation); - State PIU (liaison & awareness) - FAO Supervising Engineer (verification); - NPCU (oversight) 	<p>Pre-construction & Construction</p>	<ul style="list-style-type: none"> - Daily access checks; - Weekly community updates 	<ul style="list-style-type: none"> - Included in contractor's BoQ;

<p>Temporary Risks Only:</p> <ul style="list-style-type: none"> - Short-term access disruption to canal banks and footpaths during excavation; - Temporary difficulty accessing farms or water points/division boxes; - Perceived concerns about fairness in water distribution during works. 	<ul style="list-style-type: none"> - Coordinate daily with the WUC to manage water distribution schedules; - 					
ESS6 – Biodiversity Conservation						
<ul style="list-style-type: none"> - Minor vegetation clearance along canal banks; - Temporary disturbance to livestock and small fauna using canal corridors; - Short-term alteration of micro-habitats during excavation. <p>Note: No sensitive species or critical habitats identified during the baseline survey. Impacts are site-specific and fully reversible.</p>	<ul style="list-style-type: none"> - Limit vegetation removal to areas strictly needed for canal shaping; - Avoid harming livestock; maintain access routes for grazing animals; - Ensure machinery operates only within the existing canal footprint; - Prohibit dumping spoil in vegetated or grazing areas. 	<ul style="list-style-type: none"> - Hand tools with controlled clearing techniques were required; - Site supervision checklists 	<ul style="list-style-type: none"> - Contractor (implementation); - FAO Supervising Engineer (monitoring); - State PIU (coordination) 	Construction	<ul style="list-style-type: none"> - Daily supervision during clearing; - Weekly monitoring by FAO SE 	<ul style="list-style-type: none"> - Included in contractor's BoQ;
ESS8 – Cultural Heritage						
<ul style="list-style-type: none"> - Low probability of encountering cultural or historical materials during excavation <p>Note: No known cultural heritage sites are located within the project's</p>	<ul style="list-style-type: none"> - Apply the WB Chance Finds Procedure; - Immediately stop work if artifacts or bones of dead bodies are discovered; - Notify State MoAI PIU, NPCU and elders; - Resume works only after official written clearance. 	<ul style="list-style-type: none"> - Chance Finds Procedure; - Reporting forms; - Barrier tape/fencing materials 	<ul style="list-style-type: none"> - Contractor (implementation); - FAO Supervising Engineer (verification); - NPCU – MoAI (oversight) 	Construction	<ul style="list-style-type: none"> - Activate procedure <i>only if triggered</i>; - Immediate reporting within same day 	<ul style="list-style-type: none"> - Contractor cost (no additional budget required)

footprint, but <i>chance finds remain possible.</i>						
<i>ESS10 – Stakeholder Engagement and Information Disclosure</i>						
<p><i>A. Inclusion & Participation Risks:</i></p> <ul style="list-style-type: none"> - Exclusion of women, youth, minority, and vulnerable groups from consultations and project decisions; - Poor communication causing confusion about project benefits or schedules; <p><i>B. Information Disclosure Risks:</i></p> <ul style="list-style-type: none"> - Insufficient dissemination of project information to farmers and water users; - Limited understanding of temporary water disruptions or construction impacts; <p><i>C. GM Risks:</i></p> <ul style="list-style-type: none"> - Low awareness or poor access to the grievance mechanism; - Difficulty monitoring social harm or addressing complaints promptly. 	<p><i>A. Inclusion Measures:</i></p> <ul style="list-style-type: none"> - Implement the Stakeholder Engagement Plan (SEP) throughout project stages; - Hold inclusive consultations ensuring participation of women, youth, elders, WUC members, and vulnerable groups; Provide schedules, updates, and notices in simple local Somali language. <p><i>B. Information Disclosure:</i></p> <ul style="list-style-type: none"> - Regularly inform communities of construction timelines, flow interruptions, and safety precautions; - Share updates through WUCs, village leaders, and State PIU; - Display key information on boards at site and village centers. <p><i>C. GM Strengthening:</i></p> <ul style="list-style-type: none"> - Disseminate/publicize GM channels widely (phone numbers, focal persons, complaint boxes); - Maintain GM logs at PIU & contractor level; - Provide feedback to complainants and close cases promptly; 	<ul style="list-style-type: none"> - Stakeholder Engagement Plan (SEP); - GM tools (register, hotline, complaint forms); - Consultation attendance sheets; - Community information boards 	<ul style="list-style-type: none"> - NPCU – MoAI (oversight); - Jubaland State PIU (community engagement); - FAO Technical Assistance (support & training); - Contractor (on-site disclosure, GM awareness) 	<p>Pre-construction & Construction</p>	<ul style="list-style-type: none"> - Weekly community updates; - Monthly GM reviews; - Consultations as needed 	<ul style="list-style-type: none"> - Included in project management budget; - Included in contractor obligations

	- Monitor GM performance monthly and escalate cases if unresolved.					
<i>SEA/SH – Sexual Exploitation, Abuse & Harassment</i>						
- Risk of SEA/SH involving workers and community members; - Worker–community interaction increasing vulnerability of women and girls; - Underreporting due to stigma or fear; - Security personnel misconduct; <i>Cross-cuts ESS1, ESS2, ESS4 & ESS10.</i>	- Implement and monitor the SEA/SH Action Plan; - Mandatory Code of Conduct (CoC) for all workers and security staff; - Conduct SEA/SH awareness and prevention sessions for workers and communities; - Provide confidential, survivor-centered SEA/SH GM reporting pathway; - Train SEA/SH community focal points; - Ensure separate sanitation facilities for men and women on site; - Immediate referral of survivors to appropriate support services.	- SEA/SH Action Plan; - Signed CoCs; - Confidential GM channels; - Training & sensitization materials; - Focal point appointment letters	- Contractor (implementation); - FAO Technical Assistance (training & oversight); - FAO Supervising Engineer (verification); - State PIU (community awareness); - NPCU (compliance)	Construction	- Monthly worker training - Continuous GM availability; - Weekly supervision	- Included in contract price; - Included in TA & project management budget

6.1 Environmental & Social Monitoring Plan

The Environmental and Social Monitoring Plan establishes measurable indicators, monitoring frequency, institutional responsibilities, and reporting mechanisms to verify compliance with mitigation measures identified under Section 5. Monitoring will be conducted at multiple levels: (i) daily site-level monitoring by the Contractor; (ii) weekly supervision by the State PIU; (iii) periodic oversight and compliance review by FAO safeguards specialists; and (iv) overall compliance verification by MoAI-FGS/NPCU in line with the Environmental and Social Commitment Plan (ESCP). Monitoring findings will be documented in site inspection reports and consolidated into monthly environmental and social performance reports. Corrective actions will be issued where non-compliance is identified. The table 3 below presents the indicators, methods, responsibilities, and reporting arrangements for continuous monitoring of ESMP implementation.

Table 3: Environmental & Social Monitoring Plan

ESS / Area	Monitoring Indicators	Monitoring Method	Responsibility	Frequency	Reporting To
<i>ESS1 – E&S Risk Management</i>	<ul style="list-style-type: none"> - Embankment stability - Water flow continuity - Implementation of ESMP/C-ESMP - Conflict incidents logged 	<ul style="list-style-type: none"> - Site inspections - Photographic evidence - Daily logs - GM database reviews 	Contractor/FAO SE/State PIU	Daily / Weekly	NPCU & FAO
<i>ESS2 – Labor & OHS</i>	<ul style="list-style-type: none"> - PPE use - Worker attendance & contracts - Toolbox talks conducted - Worker GM cases handled - OHS incidents & RCA reports 	<ul style="list-style-type: none"> - Observation - Worker registers - OHS logs - GM review 	Contractor/FAO SE	Daily / Weekly / Monthly	NPCU
<i>ESS3 – Pollution & Resource Efficiency</i>	<ul style="list-style-type: none"> - Dust & noise levels - Spoil disposal compliance - Waste segregation - TDS/TSS testing results - Fuel/oil spill logs 	<ul style="list-style-type: none"> - Visual inspection - Water & soil testing - WMP logs 	Contractor/FAO SE	Daily / Weekly	State PIU / NPCU
<i>ESS4 – Community Health & Safety</i>	<ul style="list-style-type: none"> - Safety signage & fencing - Traffic control measures - Debris removal - Security conduct logs 	<ul style="list-style-type: none"> - Safety audits - Community feedback - GM review 	Contractor/FAO SE	Weekly	NPCU
<i>ESS5 – Temporary Access Management</i>	<ul style="list-style-type: none"> - Access routes open - Bypass paths functional - No complaints on blocked access 	<ul style="list-style-type: none"> - Site inspection - WUC coordination logs 	Contractor/FAO SE	Daily	PIU / FAO
<i>ESS6 – Biodiversity</i>	<ul style="list-style-type: none"> - Vegetation disturbance minimized - Livestock access maintained 	Field observation	Contractor/FAO SE	Weekly	NPCU
<i>ESS8 – Cultural Heritage</i>	<ul style="list-style-type: none"> - Chance finds managed correctly 	<ul style="list-style-type: none"> - Review of Chance Finds records 	Contractor/FAO SE	If triggered	NPCU
<i>ESS10 – Stakeholder Engagement</i>	<ul style="list-style-type: none"> - Consultations conducted - Information displayed - GM usage & closure rate 	<ul style="list-style-type: none"> - SEP records - GM monitoring 	State PIU/FAO TA	Weekly / Monthly	NPCU
<i>SEA/SH – Cross-cutting</i>	<ul style="list-style-type: none"> - CoC compliance - SEA/SH training delivered - SEA/SH GM cases managed confidentially 	<ul style="list-style-type: none"> - Training records - CoC logs - GM review 	Contractor/FAO TA/State PIU	Monthly	NPCU

Note: All monitoring activities are embedded in the ESMP budget and project management costs; no separate monitoring cost line is required.

6.1.1 Monitoring Approach and Frequency

Monitoring activities will be structured as follows:

- **Daily Monitoring:** Conducted by the Contractor's site supervisor to verify implementation of OHS measures, trench safety, waste management, and community protection measures.
- **Weekly Monitoring:** Conducted by the State PIU Environmental and Social Officer to assess compliance with ESMP provisions and verify documentation (PPE logs, training records, grievance logs).
- **Monthly Monitoring:** Joint review by FAO safeguards team and PIU to assess environmental performance, labor compliance, SEA/SH awareness activities, and grievance management effectiveness.
- **Incident-Based Monitoring:** Immediate reporting of serious incidents (e.g., worker injury, spill to river, SEA/SH allegation) within 24–48 hours in accordance with ESCP requirements.

Monitoring will include verification against defined performance indicators. Non-compliance thresholds include: absence of required PPE, open trenches left unsecured beyond 24 hours, fuel stored without secondary containment, unresolved grievances exceeding 30 days, and failure to conduct mandatory safety briefings. Where thresholds are exceeded, corrective action plans will be issued and tracked to closure.

6.1.2 Reporting and Documentation

The Contractor will prepare weekly Environmental and Social Site Reports summarizing compliance status, incidents, grievances, safety briefings, and corrective actions. The State PIU will consolidate these into monthly safeguard performance reports submitted to NPCU. FAO will conduct periodic supervision missions and prepare compliance verification notes. All monitoring documentation, including site inspection checklists, training attendance sheets, grievance logs, and incident reports, will be maintained at site and made available for World Bank supervision missions.

Incident reporting protocol: Any significant incident, including fatality, serious injury, major spill, security incident, or SEA/SH allegation, will be reported to the State PIU and NPCU within 24–48 hours in accordance with the Environmental and Social Commitment Plan (ESCP). A root cause analysis and corrective action plan will be submitted within the timeframe specified by the ESCP.

SEA/SH monitoring clause: Monitoring of SEA/SH mitigation measures will include verification of worker Code of Conduct enforcement, number of awareness sessions conducted, functionality of confidential reporting channels, and timely referral of cases through survivor-centered pathways. Confidentiality will be maintained in all SEA/SH-related monitoring records. Long-term operational monitoring: During operation, monitoring will focus on system functionality, tank structural integrity, pipeline leak detection, equitable water distribution, and avoidance of waterlogging or salinity build-up. The Canal Committee, in coordination with the PIU, will oversee routine operational monitoring.

6.2 Capacity Building and Training Plan

Effective implementation of this ESMP depends on strengthening institutional, contractor, and community capacity to understand and apply environmental and social safeguards in line with the World Bank Environmental and Social Framework (ESF). The Capacity Building and Training Plan defines structured training activities, target groups, delivery frequency, responsible institutions, and documentation requirements to ensure sustained compliance throughout construction and early operation phases. All training activities will be budgeted under the ESMP implementation costs and will be documented through attendance sheets, training materials, and post-training evaluations.

6.2.1 Training Objectives

The capacity-building program aims to:

- Ensure contractor personnel understand and implement ESMP and C-ESMP obligations.

- Strengthen occupational health and safety (OHS) compliance, including trench safety, working at height, heat stress management, and electrical safety.
- Promote awareness of community health and safety measures.
- Ensure proper functioning of the Grievance Mechanism (GM), including confidential SEA/SH reporting pathways.
- Enhance the capacity of PIU and FAO supervision teams to conduct monitoring and reporting in line with ESCP requirements.
- Build capacity of the Canal/Water User Committee (WUC) for safe operation and maintenance (O&M) and equitable water distribution.

Table 4: Summary of Capacity Building Plan

Target Group	Training Topic(s)	Timeline / Frequency	Type / Modality	Lead Facilitator(s)	Cost / Responsibility
Prospective Contractors (bidders)	Key E&S clauses in bidding documents; ESMP and ESF obligations; minimum OHS, LMP and SEA/SH requirements	Once, during pre-bid / pre-contract briefing	Short indoor or virtual session	FAO E&S Specialist, NPCU/PIU	Covered under FAO TA / project preparation
Contractor's Project Manager, Site Engineer, OHS/E&S Officer, Foremen	C-ESMP preparation and implementation; OHS procedures and emergency response; Waste Management Plan; Worker and Community GM; SEA/SH Action Plan and Code of Conduct	At project start (mobilization)	Half-day face-to-face workshop plus on-site practical session	FAO E&S Specialist and State PIU E&S staff	Covered under FAO TA / PIU operating budget
PIU E&S Specialist and Supervising Engineer (State MoAI / NPCU)	Supervision and monitoring of ESMP/C-ESMP; WB ESF and national ESIA requirements; review of contractor E&S reports; use of simple monitoring tools	At start of works and one mid-term refresher	Face-to-face or online training session	FAO E&S Specialist	Covered under FAO TA / PIU operating budget
Canal/Water User Committee and Community Representatives (elders, women, youth)	Basic canal O&M; community role in ESMP monitoring; GM access and referrals; GBV/SEA/SH awareness; community safety around works	Once during mobilization and one refresher before completion	On-site participatory training in the canal village	FAO and PIU E&S staff, with WUC	Covered under FAO TA / PIU community engagement budget

All Construction Workers (including drivers and security staff)	OHS (PPE use, site rules, safe excavation, traffic management); Code of Conduct; worker GM; SEA/SH prevention and sanctions; appropriate security behavior	Induction for all new workers and weekly toolbox talks	On-site toolbox talks / tailgate sessions	Contractor's OHS/E&S Officer, supervised by supervising engineer / FAO	Included in contractor's contract cost
---	--	--	---	--	--

7. Implementation Arrangements

Effective implementation of this Environmental and Social Management Plan requires clear definition of roles, responsibilities, coordination mechanisms, and accountability among all institutions involved in the Xero-koowaad irrigation rehabilitation sub-project. This section outlines the institutional arrangements that will ensure compliance with national regulations, the World Bank Environmental and Social Framework, and project safeguard commitments.

The main institutional responsibilities are as follows:

Federal Ministry of Agriculture and Irrigation (MoAI-FGS)

The Federal Ministry of Agriculture and Irrigation, through the National Project Coordination Unit (NPCU), has overall responsibility for implementation of the Xero-koowaad sub-project under the Somalia Food Systems Resilience Project. The NPCU provides strategic oversight and ensures that environmental and social commitments under the Environmental and Social Commitment Plan are met.

The NPCU is responsible for:

- Ensuring that this ESMP is disclosed, enforced, and integrated into procurement and contract documents.
- Providing oversight on safeguards compliance and reviewing monitoring and incident reports.
- Coordinating with the World Bank on environmental and social performance, including incident notification and follow-up.

Ministry of Environment and Climate Change (MoECC)

The Ministry of Environment and Climate Change (MoECC), as the national environmental regulatory authority, retains oversight responsibility for environmental compliance under Somalia's environmental framework. MoECC may conduct periodic oversight or request documentation related to environmental approvals, compliance monitoring, and incident management. The NPCU will coordinate with MoECC where required and ensure that project implementation remains consistent with national environmental requirements.

Jubaland State Ministry of Agriculture and Irrigation (MoAI-JS)

The Jubaland State Ministry of Agriculture and Irrigation, through its Project Implementation Unit (PIU), is responsible for day-to-day field coordination and supervision of the sub-project in Luuq District.

The PIU will:

- Supervise contractor compliance with the ESMP and approved Contractor Environmental and Social Management Plan.
- Facilitate engagement with local authorities, canal committees, and community representatives.

- Support grievance handling at the local level and ensure timely resolution of complaints.
- Conduct routine site inspections and provide feedback to the NPCU.

Food and Agriculture Organization of the United Nations (FAO)

FAO provides Technical Assistance under the S-FSRP, supporting the project with engineering design, safeguards supervision, and implementation support.

FAO's role includes:

- Supporting preparation, review, and implementation of environmental and social instruments.
- Providing technical supervision and safeguards monitoring during construction.
- Supporting reporting, documentation, and capacity strengthening related to environmental and social management.

FAO does not act as the implementing agency but supports compliance and quality assurance throughout the project cycle.

Environmental and Social Staffing Structure

The Contractor will appoint qualified Environmental, Social, and Occupational Health and Safety (OHS) focal persons prior to mobilization. The State PIU will designate an Environmental and Social Officer responsible for routine monitoring and grievance oversight. FAO will provide periodic supervision through its safeguard's specialists. Clear reporting lines will be maintained between the Contractor and PIU, and between the PIU and NPCU.

Construction Contractor

The construction contractor bears primary responsibility for on-site implementation of environmental and social mitigation measures.

The contractor is required to:

- Prepare and implement a Contractor Environmental and Social Management Plan (C-ESMP) consistent with this ESMP prior to commencement of works.
- Designate qualified environmental, social, and occupational health and safety focal persons on site.
- Ensure compliance with labor standards, occupational health and safety requirements, community safety measures, and SEA/SH prevention obligations.
- Maintain records, monitoring data, and incident reports and submit them regularly to the PIU.

Failure to comply with ESMP obligations may result in corrective actions, suspension of works, or contractual penalties.

Local Authorities and Community Structures

The Luuq District Administration, village elders, and the canal committee play a supportive role in implementation.

Their responsibilities include:

- Facilitating access to work sites and resolving minor access-related issues.
- Supporting community awareness, communication, and consultation activities.
- Assisting in grievance intake and resolution at the community level.
- Supporting long-term operation and maintenance arrangements following completion of works.

7.1 Coordination and Communication Mechanisms

Coordination among institutions will be maintained through regular site meetings, joint inspections, and reporting channels. The PIU will act as the primary coordination hub at field level, ensuring alignment between the contractor, FAO, and local authorities.

Key communication mechanisms include:

- Routine progress and safeguards meetings during construction.
- Advance notification to communities regarding construction schedules and access disruptions.
- Clear escalation pathways for environmental, social, or security incidents.

In the event of a serious incident (including fatality, serious injury, major spill, security incident, or SEA/SH allegation), the Contractor must notify the PIU immediately and submit a preliminary report within 24–48 hours. The PIU will notify the NPCU, which will inform the World Bank in accordance with the Environmental and Social Commitment Plan. A detailed incident investigation and corrective action plan will be submitted within the timeframe specified under the ESCP.

Where private security personnel are engaged to safeguard equipment or construction materials, they will operate in accordance with ESS4 requirements. Security personnel will receive briefing on appropriate conduct, community engagement standards, and prohibition of excessive force. Coordination with local authorities will be maintained to ensure security arrangements do not create community tensions.

7.2 Grievance Management Integration

Implementation arrangements are closely linked with the Grievance Mechanism (GM). The contractor will maintain a site-level grievance register, while the PIU and NPCU will oversee escalation and resolution of grievances that cannot be resolved locally.

Special provisions are in place for confidential handling of SEA/SH-related complaints in accordance with survivor-centered principles.

7.3 Compliance, Enforcement, and Adaptive Management

Compliance with this ESMP is mandatory for all parties involved in the Xero-koowaad sub-project. Monitoring findings and community feedback will inform corrective actions and adaptive management where required.

The ESMP may be updated during implementation to reflect site realities, monitoring outcomes, or regulatory changes, subject to approval by the NPCU and the World Bank.

Adaptive management will be applied where monitoring findings, climate conditions, or community feedback indicate emerging risks not previously identified. Any significant changes to mitigation measures or risk categorization will be reviewed by the NPCU and cleared with the World Bank prior to implementation.

8. Public Consultation and Disclosure

Public consultation and information disclosure are integral to the preparation and implementation of the Xero-koowaad Canal Environmental and Social Management Plan. Engagement activities have been conducted in accordance with the Somalia Food Systems Resilience Project Stakeholder Engagement Plan and the World Bank Environmental and Social Framework, with the objective of ensuring transparency, inclusivity, and responsiveness to stakeholder concerns.

8.1 Consultations with Jubaland MoAI

Consultations were held with relevant government institutions at both federal and state levels during the identification, assessment, and design phases of the Xero-koowaad sub-project. These engagements involved the

Federal Ministry of Agriculture and Irrigation through the National Project Coordination Unit and the Jubaland State Ministry of Agriculture and Irrigation through its Project Implementation Unit.

Discussions focused on the technical feasibility of rehabilitating the Xero-koowaad Canal, alignment with national irrigation priorities, safeguards requirements, institutional roles, and coordination arrangements. These consultations confirmed that the sub-project aligns with Jubaland's agricultural development priorities and complies with national environmental and social regulatory frameworks.

8.2 Community Consultations in the Xero-koowaad Command Area

Community-level consultations were conducted within the Xero-koowaad command area in Luuq District, engaging farmers, canal committee members, elders, women, and youth representatives. The consultations aimed to inform stakeholders about the proposed rehabilitation works, expected benefits, construction activities, and potential temporary impacts.

Participants expressed strong support for the project, highlighting the long-standing challenges caused by pipeline leakage, unreliable irrigation supply, and high diesel pumping costs. Farmers emphasized the importance of restoring reliable water delivery to the entire command area, particularly downstream plots that have historically received limited irrigation.

Women participants noted the impact of irrigation failures on household food security and labor burdens, while youth highlighted interest in employment opportunities during construction. Canal committee members emphasized the need for transparent water distribution arrangements and coordination during construction to avoid conflicts.

8.3 Key Issues Raised and How They Are Addressed

Several key issues were raised during consultations and have been addressed in the design of the sub-project and this ESMP.

Concerns were raised about safety risks associated with open trenches and construction machinery. These concerns are addressed through the inclusion of strict community health and safety measures, clear site demarcation, warning signage, and controlled access to work areas.

Temporary disruption of access to farms during pipeline installation was identified as a concern. In response, the contractor will implement phased construction, provide advance notice to affected farmers, and establish temporary crossings or alternative access routes where necessary.

Questions regarding labor recruitment and fairness were raised. These are addressed through commitments to local hiring, transparent recruitment practices, and the establishment of a Worker Grievance Mechanism.

Concerns related to respectful conduct of workers and protection of women and vulnerable groups were also noted. These concerns are addressed through enforcement of worker Codes of Conduct, SEA/SH awareness training, and confidential grievance channels. Specific awareness sessions will be conducted to explain survivor-centered SEA/SH reporting procedures. Communities were informed that SEA/SH cases will be handled confidentially, without requirement for evidence presentation to community structures, and without mediation. Referral pathways to appropriate support services will be communicated discreetly.

Table 5: Stakeholder Meeting Summary

Date	Stakeholder Group	Location	Purpose	Main Points Raised
23 October 2025	Jubaland MoAI and Luuq district commissioner	Luuq	Discuss project prioritization and review technical considerations	Pipeline deterioration, water shortages, need for solar pumping, coordination roles
26 October 2025	Community Representatives	Xero-Kowaad	Environmental & Social screening and field assessment	Pipeline breakages, low downstream flow, safety concerns, access issues
26 October 2025	Elders, Farmers, Women, Youth, Canal Committee	Xero-Kowaad	Community consultation meeting	Poor pipeline condition, need for rehabilitation, desire for training, labor contribution commitment

8.4 Information Disclosure

This ESMP will be disclosed in a manner accessible to stakeholders in Luuq District. Disclosure measures include making the ESMP available through the Jubaland State Ministry of Agriculture and Irrigation and sharing key project information with community representatives and the canal committee.

During construction, ongoing disclosure will be maintained through community meetings, site notice boards, and direct communication with affected farmers regarding work schedules, access restrictions, and safety measures. Information on the Grievance Mechanism will be clearly communicated, including contact points and procedures for submitting complaints.

Through these consultation and disclosure activities, the project ensures that stakeholders remain informed, engaged, and able to provide feedback throughout implementation, contributing to transparency, trust, and effective risk management.

Documentation of consultations, including attendance sheets, signed participant lists, photographs, and meeting minutes, is provided in Annex 3 & 6. These records demonstrate meaningful stakeholder engagement consistent with ESS10 principles of inclusiveness, accessibility, and transparency.

9. Grievance Mechanism (GM)

The Grievance Mechanism provides a transparent, accessible, and responsive process for receiving, assessing, and resolving complaints and concerns related to the Xero-koowaad irrigation rehabilitation sub-project. The GM is designed to strengthen accountability, promote community trust, and ensure that environmental and social issues are addressed promptly and fairly throughout project implementation.

Under the S-FSRP framework, three distinct grievance mechanisms apply to the Xero-koowaad sub-project: (i) General Project GM for community members and project-affected persons (ESS10 & ESS5); (ii) Worker GM for labor-related complaints (ESS2), administered separately under the Labor Management Procedures; and (iii) SEA/SH GM pathway for confidential reporting of sexual exploitation, abuse, or harassment cases (ESS1, ESS2, ESS4).

These mechanisms operate in parallel but follow differentiated procedures to ensure confidentiality, fairness, and compliance with World Bank requirements.

The GM is consistent with the Somalia Food Systems Resilience Project Grievance Mechanism Framework and the World Bank Environmental and Social Framework, particularly Environmental and Social Standard 10 on stakeholder engagement and information disclosure.

9.1 GM Structure and Process

The GM for the Xero-koowaad sub-project operates at three levels: community level, project implementation unit level, and national level.

At the community level, grievances may be submitted verbally or in writing to the canal committee, community elders, or the contractor's site representative. These actors will record the complaint and attempt to resolve it promptly through consultation with the complainant and relevant parties.

If a grievance cannot be resolved at community level, it will be escalated to the Jubaland State Ministry of Agriculture and Irrigation Project Implementation Unit, which will review the complaint, conduct any necessary investigations, and propose corrective actions.

Unresolved grievances may be further escalated to the Federal Ministry of Agriculture and Irrigation National Project Coordination Unit, which has overall authority to ensure resolution. Complainants retain the right to access the World Bank Grievance Redress Service or the national judicial system at any stage.

All grievances will be logged, tracked, and documented, with clearly defined timelines for acknowledgment, investigation, response, and resolution, and with labor-related grievances handled through a separate, confidential Worker Grievance Mechanism in accordance with the Labor Management Procedures.

The following timelines will apply:

- Acknowledgment of receipt within 3 working days
- Initial review and assessment within 7 working days
- Resolution and response within 30 days, unless the case requires extended investigation
- Escalation to the next level if unresolved within the specified timeframe

Complainants will be informed in writing or verbally (where literacy is limited) of the status and outcome of their complaint.

9.2 Handling of SEA/SH-Related Cases

Complaints related to sexual exploitation, abuse, or harassment (SEA/SH) will be handled through confidential, survivor-centered procedures. Such complaints will not be managed through standard community-level mechanisms.

Dedicated reporting channels will be established to allow survivors or witnesses to report SEA/SH incidents safely and confidentially. Trained focal points will ensure that complaints are handled with sensitivity, confidentiality, and respect, and that survivors are referred to appropriate support services where available.

No requirement will be placed on survivors to provide evidence or confront alleged perpetrators. SEA/SH cases will be managed through a dedicated referral pathway to available health, psychosocial, and legal support services, in accordance with survivor-centered principles. Retaliation against complainants is strictly prohibited.

All grievance records will be maintained securely and handled in accordance with confidentiality principles. Personal identifiers will be protected, and access to grievance logs will be restricted to authorized personnel. SEA/SH-related records will not be included in general grievance summaries and will be anonymized in reporting to prevent identification of survivors.

9.3 GM Accessibility and Communication

The GM is designed to be free of charge, culturally appropriate, and accessible to all stakeholders, including women, youth, minority groups, and persons with disabilities. Information about the GM, including contact points and procedures, will be disseminated through community meetings, site notice boards, and engagement with the canal committee. Complaints may be submitted anonymously if desired.

Language and literacy considerations will be addressed by allowing verbal complaints and providing assistance where needed, and no complainant or witness will be subject to retaliation, discrimination, or reprisal for raising a grievance through the GM.

Grievances may be submitted through multiple channels, including:

- Direct verbal submission to Canal Committee representatives or Contractor focal person
- Telephone contact (project focal person number to be publicly displayed)
- Written submission to designated complaint boxes placed at the construction site and Canal Committee office
- Submission to PIU office during working hours

Complaint boxes will be opened regularly in the presence of designated officials to ensure transparency.

9.3.1 Grievance Handling Workflow

The grievance handling process follows these steps:

- Receipt and Registration – Complaint recorded in GM logbook with unique reference number.
- Acknowledgment – Confirmation provided to complainant within 3 working days.
- Assessment and Investigation – Responsible authority reviews complaint and gathers relevant information.
- Resolution Proposal – Corrective action proposed and communicated.
- Implementation of Resolution – Action implemented and documented.
- Closure – Complaint closed after confirmation from complainant, or escalated if unsatisfied.

9.4 Roles and Responsibilities

The construction contractor is responsible for establishing a site-level grievance register and ensuring that workers and community members are informed of the GM. The contractor must cooperate fully in investigations and implement corrective actions. The Jubaland State MoAI PIU oversees grievance handling at the field level and ensures timely resolution. The MoAI-FGS NPCU provides oversight, escalation support, and reporting to the World Bank.

Community leaders and canal committee members support grievance intake and communication but do not adjudicate serious or sensitive complaints.

9.5 Monitoring, Reporting, and Improvement

GM performance will be assessed using indicators such as the number of grievances received, the percentage resolved within agreed timelines, and the recurrence of similar complaints. GM performance will be monitored through regular review of grievance records and resolution timelines, and summary information on grievances and resolutions will be included in project monitoring reports, while maintaining confidentiality where required.

Lessons learned from grievances will inform adaptive management and improvements to project implementation and safeguards performance.

10. ESMP Implementation Budget.

The Environmental and Social Management Plan (ESMP) includes costs associated with safeguards compliance, occupational health and safety (OHS), community engagement, waste management, monitoring, and reporting. For this subproject, the ESMP budget is calculated at 5% of the total contract price.

Table 6: ESMP Budget Breakdown

ESMP Component	Description of Activities Covered	Estimated Cost (USD)
1. OHS Implementation	PPE for workers, signage, fencing, first-aid kits, heat-stress measures, daily toolbox talks	2,214.94
2. Environmental Measures	Waste management, spoil disposal, dust suppression, erosion controls, spill-prevention materials	1,660.99
3. Social Safeguards	Community awareness, GBV/SEA/SH messaging, SEA/SH focal point support, community safety measures	1,108.19
4. GM Management	Complaint boxes, hotline operation, GM registers, documentation & visibility materials	692.98
5. Monitoring & Reporting	FAO/PIU joint monitoring, reporting tools, compliance verification, field follow-ups	1,245.36
6. Stakeholder Engagement (SEP)	Community consultations, meetings, disclosure materials	553.68
7. Capacity Building	Training on ESF, OHS, LMP, SEA/SH, GM for workers and PIU	830.74
Total ESMP Cost		8,306.88

Annex 1: Environmental & Social Screening

Project Name	Somalia Food System Resilient project (SFSRP) (P177816)		
Project Description	This project, implemented under the Somalia Food Systems Resilience Program (S-FSRP) , involves the rehabilitation of approximately 1.15 km of the Xero-koowaad irrigation pipeline canal and its associated auxiliary structures in Luuq District, Jubaland State , with the objective of restoring critical irrigation infrastructure, improving reliable agricultural water access, and strengthening community resilience to climate variability. The Xero-koowaad Canal abstracts water from the Juba River , with the intake located at 3.802161° N, 42.535978° E and the tail end of the canal at 3.808902° N, 42.537505° E . Based on the environmental and social screening conducted for the sub-project, the intervention is Risk-rated as a Moderate activity , primarily due to temporary and site-specific construction-related impacts such as localized soil disturbance, dust and noise generation, temporary access disruptions, and occupational health and safety risks. These impacts are predictable and reversible and will be effectively managed through the implementation of a site-specific Environmental and Social Management Plan (ESMP) in accordance with national regulations and the World Bank Environmental and Social Framework.		
Prepared By	Daud Mohamed Hussein	Date of Preparation	26/10/2025
Approved By		Date of Approval	

No	Question	Yes	No	E&S risk rating, - Low, Moderate, Substantial & High	Documents Required	Remarks/Comments
ESS1: Assessment and Management of Environmental and Social Risks						
1	Does the project affect downstream water flows?		No	Low	ESMP	The subproject is a new, pipeline installation will not cause any temporary disruption.
2	Does it require clearing of trees, pasture/browse?	Yes		Low	ESMP	Little vegetations along the canal banks.
3	Is an Environmental and/or Social Assessment required?	Yes		Moderate	ESMP	ESMP to cover OHS, waste, community safety.
4	Is there a risk of diversion of project benefits?	Yes		Moderate	SEP + GM	Possible during temporary water disruptions.

5	Is there a risk of lack of monitoring due to remoteness/insecurity?		No	Moderate	SMP	Liaising with local authorities while considering Luuq/ Somali's general context.
6	Will the project generate dust, noise, or air pollution?	Yes (minor)		Low	ESMP	Manage by water spraying & restricting to daytime works.
ESS2: Labour and Working Conditions						
7	Any risk of child/forced labour?		No	Low	LMP	Community-based monitoring.
8	Does the activity include construction?	Yes		Moderate	ESMP	Works involve canal excavation.
9	Risk of lacking OHS for workers?	Yes		Moderate	OHS Plan	Toolbox talks, PPE, safe procedures.
10	Are workers provided PPE?	Yes (mandatory)		Moderate	OHS Plan	Helmets, boots, gloves, vests.
11	Are workers trained on safety/machinery?	Yes (mandatory)		Moderate	OHS Plan	Induction + toolbox training.
12	Risk of delayed/underpayment?	Yes (Possible)		Moderate	LMP	Ensure fair contracts, monitor payments.
13	Are women equally included in work opportunities?	Yes (to be ensured)		Moderate	LMP + GBV Plan	Promote equal access; monitor gender inclusion.
ESS3: Resource Efficiency and Pollution Prevention						
14	Will the project use large volumes of materials?	Yes		Low	ESMP	Mainly soil/water for excavation.
15	Will it use water reducing community supply or water during or after construction, which will reduce the local availability of ground water and surface water?		No	Low	ESMP	River has sufficient flow; use mainly for curing/dust suppression.
16	Will it create solid/vegetation wastes?	Yes		Low	WMP	Spoil & vegetation debris cleared in/around the canal banks
17	Will it create hazardous waste (fuels, oils)?	Yes (fuels/lubricants)		Moderate	ESMP + WMP	Store in bunded areas far from canal; spill kits available.
18	Will it result in wastewater discharges?		No	Low	ESMP	Canal follow water and rainwater may disturb the excavation. Use settling pits before release.
19	Will it disturb flora/fauna?		No	Low	–	Agricultural setting; no critical habitats nearby.
20	Will it require chemical inputs (pesticides/fertilizers)?		No	Low	–	Not applicable.

21	Risk of accidental spills/leaks?	Yes		Low	ESMP	Spill prevention measures, bunding, fire extinguishers.
ESS4: Community Health and Safety						
22	Risk of community exposure to physical hazards (open excavation)?	Yes		Moderate	ESMP	Fence off site, signage, and safe crossing points.
23	Risk of traffic/road accidents?	Low		Low	ESMP	Limited traffic; monitor transport routes.
24	Risk of GBV/SEAH due to labor influx?	Yes		Low	GBV Action Plan	Awareness, code of conduct, reporting channels.
25	Risk of spread of communicable diseases (due to labor influx, sanitation, or hygiene issues)	Yes		Moderate	ESMP	Hygiene, PPE, awareness campaigns.
26	Is an area where there has been insecurity incidents in the past 12 months?		No	Moderate	Security Management Plan	Coordinate with authorities, proportionate security.
ESS5: Land Acquisition, Restrictions on Land Use, Resettlement						
27	Will land be acquired?		No	Low	–	Works within canal footprint.
28	Will households/assets be displaced?		No	Low		no assets/households be displaced
29	Will there be restriction of access?	Yes		Moderate	ESMP	Temporary during canal excavation and rehab/reconstruction of auxiliary structures
30	Risk of loss of income, assets or livelihoods?		No	Low		No risk of assets, income loss or livelihoods.
31	Involve significant excavations, demolition, and movement of earth, flooding, or other environmental changes?	Yes		Low	ESMP	Excavation of canal bed only and
32	Will IDPs/vulnerable groups be affected?		No	Low	SEP + GM	No direct, but ensure IDPs and vulnerable groups are included in consultation and compensation processes, if impacts arise.
ESS6: Biodiversity Conservation						
33	Will the project affect sensitive ecosystems (e.g., intact natural forests, mangroves, wetlands) or threatened species?		No	Low	–	Canal lies in agricultural setting; no critical habitats nearby.
34	Will it cause soil erosion/degradation?	Yes (minor)		Low	ESMP	
35	Affect habitats/migration routes?		No	Low	–	No wildlife corridors nearby.

36	Spread invasive species via spoil?	Yes		Low	WMP	Approved spoil disposal only.
ESS7: Indigenous Peoples / Historically Underserved Communities						
37	Are Indigenous Peoples or historically underserved traditional communities present in or around the project area?		No	N/A	–	No such groups identified communities in Beledweyne District/ Hirshabeele State or in generally Somalia
38	Could the project affect Indigenous Peoples' rights, lands, resources, or culture?		No	N/A	–	Not applicable in Somalia context
ESS8: Cultural Heritage						
39	Is site near archaeological/cultural heritage?		No	Low	–	None identified.
40	Potential for chance finds?	Yes	Low		Chance Find Procedure	Contractor to apply chance find protocol.
ESS9: Financial Intermediaries						
42	Is the project implemented through financial intermediaries (banks, MFIs)?		No	N/A	–	It is a direct rehabilitation activity, not financial intermediation.
43	Will financial intermediaries on-lend funds to sub-projects?		No	N/A	–	Not applicable.
ESS10: Stakeholder Engagement and Disclosure						
44	Risk of exclusion of women/youth in consultations?	Yes (Possible)		Moderate	SEP	Ensure equal participation.
45	Lack of grievance redress?		No	Low	GM	Functional GM in place.
46	Lack of government consultation?	Yes (generally weak)		Moderate	SEP	Continuous engagement with local authorities.
47	Historical exclusion of disabled persons?	Yes (Possible)		Moderate	SEP	Ensure accessibility & inclusion.
48	Lack of social baseline data?	Yes		Moderate	ESMF	Use rapid participatory appraisal + FAO data.
EHS Screening (Environmental, Health & Safety)						
49	Does intervention cause dust/noise/air pollution?	Yes (minor)		Low	ESMP	Water spraying is required where necessary.
50	Large volumes of construction materials?	Yes		Low	ESMP	Locally sourced where possible.
51	Solid waste properly managed?	Yes		Low	WMP	Contractor to implement WMP.
52	Are chemicals (fuel/lube) properly handled?	Yes		Moderate	ESMP	Bunded storage, away from the canal.
53	Wastewater discharge risks?	Yes (rainwater)		Low	ESMP	Settling pits before release.

54	Excavations/tunnels?	Yes		Low	ESMP	Open canal excavation, control spoil & restore canal banks.
55	Risk of over-exertion?	Yes		Moderate	OHS Plan	Task rotation, rest breaks, hydration.
56	Slips & falls risk?	Yes		Moderate	OHS Plan	Safe walkways, signage.
57	PPE availability?	Yes		Moderate	OHS Plan	Enforced PPE use, monitoring.
58	Workers trained in OHS?	Yes		Moderate	OHS Plan	Toolbox talks, induction.
59	High-risk activities?	Yes		Moderate	OHS Plan	Excavation, machinery, working near water; mitigation required.
60	Traffic Risks?	Yes		Moderate	OHS Plan	Temporary – Community (pedestrian), workers and trucks will require safe paths near rehab/reconstructing activities during implementation.

E&S Screening		Results and Recommendation		
Screening Results: Summary of Critical Risks and Impacts Identified	Risk/Impact	Individual Risk/ Impact Rating	Mitigation	
	Moderate	C	At the end of the screen process, tabulate the mitigation measures in an ESMP Format (see below)	
Is Additional Assessment Necessary? Evaluate the Risks/Impacts and reflect on options (see below)	Screening Result		Summary of Screening Result Justification	
	<ul style="list-style-type: none"> - Environmental and/or Social Assessment required where project is undertaken - Water interruptions during excavation and rehab/reconstruction of auxiliary structures - Soil Erosion and Degradation - Community Health and Safety - Worker Health and Safety (OHS) - Noise from construction machinery and culvert construction may disturb nearby farmers and workers and prolonged exposure could cause hearing issues for laborers - Gender/social exclusion risks 		Mitigation measures will follow CERC ESMF : <ul style="list-style-type: none"> - SEP - GM - SMP - LMP - OHS - SMP - GBV Action Plan 	
	No ESIA is required.			
	No ESIA & full ESMP is required		This project was Risk-rated as Moderate Simplified ESMP will be needed	

Annex 2: Grievance Mechanism (GM) Tools and Templates

This annex summary presents the grievance process, reporting channels, and key contacts for the Xero-Kowaad Pipeline Canal Rehabilitation under S-FSRP. Stakeholders may submit complaints at any time, anonymously or openly. The GM flows these steps:

- ✦ **Step 1 – Submit a Complaint (Any Channel)**: Complaints may be submitted verbally or in writing through community leaders, WUC focal persons, the contractor, FAO field officers, the State PIU, or the toll-free numbers. SEA/SH cases bypass local structures and go directly to the PIU GBV Focal Point or FAO/OIG.
- ✦ **Step 2 – Register and Acknowledge**: The Jubaland State PIU registers all complaints and acknowledges receipt (normally within 48 hours). Initial screening determines whether the issue can be resolved immediately or requires escalation.
- ✦ **Step 3 – Assess and Resolve**: The State PIU, FAO, and contractor collaborate to investigate and resolve issues—typically within 7–14 days. Technical issues may be escalated to NPCU if needed.
- ✦ **Step 4 – Close or Escalate**: If a resolution is accepted, the case is closed. If the complainant is not satisfied, the grievance may be escalated to NPCU or FAO Compliance, and ultimately to FAO OIG or the World Bank’s GRS for serious cases.

Table 8: GM Contact List (Project, State, National & FAO/OIG)

Table 7: GM Contact List (Project, State, National & FAO/OIG)

Level	Contact Person / Office	Contact Details	Notes
Project Level	WUC / Community Focal Points	Local contacts	First point of intake
State PIU – Jubaland MoAI	Social Safeguards & GBV Team	Email: GM@fsrp.gov.so	State-level GM & GBV focal points
National PCU – MoAI-FGS	National FSRP GM Secretariat	Hotlines: 570 / 540 (toll-free)	National escalation channels
National	National GBV Specialist	gbv@fsrp.gov.so	National-level GBV focal point
FAO Compliance Unit	Ibrahim Bare, AAP & Compliance Officer	ibrahim.bare@fao.org	Responsible for FAO Somalia project accountability
	Head of Compliance, Risk Management, Accountability	Bakhta.Boualam@fao.org	Escalation for sensitive cases
FAO Somalia Complaint Hotline	FAO Feedback Hotline	+252 633 550 120	Phone/SMS option
FAO OIG – Independent Oversight	Office of the Inspector General	Online: fao.ethicspoint.com Email: Investigations-hotline@fao.org / inspector-general-office@fao.org Mail: FAO OIG, Rome	Serious, confidential, or unresolved cases

Table 8: GM Intake/register

GM Code	Date Received	Complainant (Optional)	Location	Issue Summary	Category	Action Required	Responsible Unit	Status	Date Closed	Notes

SEA/SH Survivor-Centered Referral Pathway

This pathway ensures survivors can report safely and confidentially, without fear of retaliation or exposure. No personal details or written statements are required.

1. Safe and Confidential Reporting Options

Survivors may report directly to:

- State PIU GBV Specialist (confidential inbox): GM@fsrp.gov.so, gbv@fsrp.gov.so
- FAO Compliance Unit: Ibrahim.bare@fao.org
- FAO OIG (independent and confidential): fao.ethicspoint.com
- FAO OIG email: Investigations-hotline@fao.org

Note: SEA/SH cases **must not** be reported through community leaders or recorded in public registers.

2. Immediate Safety and Support

The GBV focal point ensures:

- Immediate safety assessment
- Confidential conversation
- No personal identification recorded
- Referral to appropriate local service providers (health, psychosocial, legal, and case management services)
- SEA/SH cases are handled separately from the general GM and are not mediated with alleged perpetrators

3. Coordination and Follow-Up

FAO and the State PIU coordinate discreetly to ensure the survivor receives assistance.

No project staff investigate SEA/SH cases — they are treated strictly through survivor support and professional services.

4. Accountability Measures

The contractor must:

- Remove any implicated workers from the project site pending investigation
- Apply contractual sanctions, including termination, in line with the Code of Conduct and applicable national law
- Report SEA/SH allegations promptly through confidential channels to the PIU and the designated GBV focal point
- Retrain all personnel on the Code of Conduct and SEA/SH prevention, including reinforcement during regular toolbox meetings
- Ensure non-retaliation against complainants and witnesses at all times

Annex 3: Community Consultation Minutes and Attendance

Public Consultation Documentation Template/Form – Completed

1. **Consultation Date:** 26/10/2025
2. **Sub-project Type:** Rehabilitation of Canal
3. **Specific Name of the Project:** Rehabilitation of Xero-Kowaad Canal
4. **Place of Consultation: State:** Jubaland state, **Region:** Gedo, **District:** Luuq, **Village (Specific site):** Xero-Kowaad Village
5. **Purpose of Consultation:** The consultation was conducted to engage the Xero-Kowaad Canal community to discuss the planned rehabilitation works under the S-FSRP. The meeting aimed to:
 - Briefing the community on the objectives of the assessment to understand and cooperate
 - Discuss the current canal condition and irrigation and farming challenges.
 - Identify potential environmental and social risks and safeguards in line with World Bank’s ESS requirements.
 - Confirm community needs, priorities, and contributions during implementation and post implementation sustainability
 - Collect technical and socio-economic data to support assessment requirements (e.g., irrigated area before/after deterioration, number of farmers benefiting, changes in canal width/depth, and the condition of associated structures).
 - Ensure inclusive participation of women, youth, elders, and vulnerable groups.).
6. **Consultation Time Started:** 11:00 A.m.
7. **Consultation Method:** *Interviewing and discussion, questionnaires* (**group discussions and individual interviews** with elders, women, youth, and farmers)
8. **Consultation Agendas/ Issues:**
 - Insufficient water conveyance through the pipeline due to internal sediment accumulation, partial blockages, and leakages at pipe joints, which have significantly reduced the effective hydraulic capacity of the system. The community has requested urgent rehabilitation, including pipe cleaning, repair, and replacement of damaged sections, to restore the pipeline to its designed capacity and ensure reliable and adequate water delivery to downstream users. Irrigation coverage has reduced and farmland productivity has declined due to both sedimentation and seasonal flooding.
 - Cross-culverts, intakes and division boxes have deteriorated; community requested their rehabilitation.
 - The community requested installation of solar system for pumping the water for irrigation as they now incur high fuel cost for irrigating their farming land
 - Construction of elevated tanks for drip irrigation (there are boreholes available intended to use during winter time when river water depletion occurs)
9. **Additional Issues Raised During Consultation**
 - Lack of farm equipment/tools/machineries for improved productivity.
 - Need for certified seeds to increase agricultural production/yields.
 - Request for canal committee training on water management and operation & maintenance (O&M).
 - Provision of pesticides and fertilizers and to train farmers on their applications;

10. Agreed Agendas/ Issues

- Canal rehabilitation is urgent and strongly supported by the community.
- The community agreed to cooperate with FAO/FSRP team and contractors during implementation and post-implementation.
- Restore the original dimensions of the canal to maximize water flow and ensure downstream users benefit.
- The community will contribute labor and support through the canal committee during rehabilitation works and to ensure O&M after rehabilitation.
- Contractor will schedule works in phases, notify communities in advance of any major disruption, and safeguard anything arises during works.
- FAO/FSRP to ensure timely communication and use of a Grievance Mechanism (GM) to address community concerns.

11. Disagreed Agenda/issues including Reasons for

- No major disagreements were recorded. The community emphasized to prioritize the rehabilitation of the canal.

12. Consultation Ended Time: 2:07 p.m.

Consultation Facilitators' Name & Role:

1. Abdirahman Nour, Civil Engineer

Signature:

----- *Abdirahman* -----

Subproject's (IP) Seal: (optional) _____

Summary of the community meeting

No	District meeting held	Location meeting held	Dates of meeting conducted	No. of council/ elders who attended	Number of women who attended	Number of men who attended	Subject discussed	What was agreed	Names of the attended members
1	Luuq	Xero-Kowaad	26/10/2025	7	0	7	1. Deteriorated dimensions of the canal (reduced	1. Community supported urgent intervention and rehabilitation of the canal	(Full names, phone numbers, and

						<p>depth, bank breaches, accumulation of silt at the bed).</p> <p>3. Reduced conveyance capacity of the canal.</p> <p>3. Need to rehabilitate existing cross culverts, intake, division boxes and cross culverts</p> <p>4. need to install of solar system to irrigate agricultural land as a cheaper energy than high fuel cost</p>	<p>2. Agreed to cooperate with FAO/FSRP/contractors during works.</p> <p>3. Restore canal dimensions and slope for water flow to downstream farms.</p> <p>4. Community will assist in O&M after rehabilitation for sustainable use of the water.</p> <p>5. Contractor to phase works, provide advance notification, and safeguard vulnerable assets.</p>	<p>signatures attached in Annex X)</p>
--	--	--	--	--	--	--	--	--



13. Consultation Attendants/ Participants:

No.	Name of Participants	Age	Sex	Position	Mobil phone No	Signature
1	Hassan Dhuxul Ibrahim	53	M	Chairperson	615323740	
2	Abdi Barre Guure	60	M	V-Chairperson	618775253	
3	Mohamed Mahamud Abdi	45	M	Member	615253778	
4	Deeq Kaariye Dhege	58	M	Member	61415147	
5	Abdullahi Hassan Farah	42	M	Member	615607842	
6	Bishaar Ahmed Nur	45	M	Member	615123029	
7	Husein Iftin Mohamed	39	M	Member	615876268	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Annex 4: Government Land Ownership Confirmation



land.pdf

Annex 5: Design of tank and pump house



Design of tank and
pump house.pdf



xero kowaadluuq.pdf

Annex 6: Stakeholder Consultation Photos

