



Enhancing Community
Resilience and Local
Governance Project

**SOUTH SUDAN ENHANCING COMMUNITY RESILIENCE AND LOCAL
GOVERNANCE PROJECT (ECRP I)**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR FLOOD CONTROL
(DYKES) IN RUBKONA AND LEER COUNTIES, UNITY STATE, SOUTH SUDAN**

Project No: 201775

August, 2022

Report Title	Environmental and Social Management Plan (ESMP) for Flood Control in Rubkona and Leer Counties, Unity State, South Sudan
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Acronyms and Abbreviations

BCS	Black Cotton Soils
CCT	County Coordination Team
DRCE	Disaster Risk Capacity Enhancement
ECRP	Enhancing Community Resilience and Local Government Project
EHS	Environment Health and Safety
ESF	Environment and Social Framework
ESMP	Environmental and Social Management Plan
GBV	Gender Based Violence
GEMM	General Environment Mitigation Measures
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
IOM	International Organisation for Migration
LMP	Labour Management Plan
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PDO	Project Development Objective
SEA	Sexual Exploitation and Abuse
SEF	Stakeholder Engagement Framework
UNITAR	United Nations Institute for Training and Research
UXO	Unexploded Explosive Ordnance

Executive Summary

ECRP project stakeholders have submitted proposals to construct and rehabilitate dykes in Rubkona and Leer counties, which have been overwhelmed by floods in 2022. As a result of this flooding the planned subprojects priority lists for the two counties cannot be realised within the project's implementation period. In light of the on-going humanitarian crisis, the County Coordination Teams in consultation with the beneficiaries have proposed that funds envisioned for ECRP I subprojects be reallocated for the rehabilitation of dykes of about 10km in Rubkona and 5km in Leer towns in Unity State. The two towns are now hosting approximately 100,000 people displaced by floods.

This ESMP was produced under guidance and reference to the laws of South Sudan, the international Conventions ratified by South Sudan and the World Bank Environmental and Social Framework (ESF).

This ESMP is designed to inform dyke construction and rehabilitation work and any associated auxiliary facilities like burrow sites and quarry sites by identifying potential environmental and social risks and impacts associated with dyke rehabilitation and construction, and also provides mitigation measures, monitoring, performance indicators, estimated costs for implementation and responsible institutions. Further, the ESMP provides general environmental mitigation measures (GEMM) and occupational health and safety (OHS) guidelines for contractors to observe and apply during the construction work. It is expected that the County Dyke Management Committees will use these ESMP guidelines for their own operation and maintenance (O&M) practices after the conclusion of the project. In addition, the ESMP provides a grievance redress mechanism (GRM) guide for stakeholders involved in the construction of dykes.

The ESMP implementation plan details the: institutional arrangement; roles and responsibilities for the implementers; planned schedule of work; disclosure of the ESMP; and an ESMP monitoring plan.

Chapter One

1.0. Introduction

The ECRP, under the aegis of the World Bank, will implement a flood mitigation program for the construction of dikes in Rubkona town of approximately 10km and 5km in Leer town. The main objective of this intervention is to save the two towns from being submerged by flood waters due to the upcoming rainy season and to protect the population

The flood response will be achieved by rehabilitating and reinforcing existing dyke structures using available local materials, specifically the black cotton soils (BCS). Both counties have identified quarry sites for the collection of black cotton and established responsibility for land restoration within the County Department of Forestry. The quarry sites will be managed by the County Dyke Management Committee.

The proposed dykes to be rehabilitated will consist of sections that are within 1 metre in height and a base of 2 metres with reasonable margins between the crest and current water level. The target is to raise the height to an average of 1.6 metres and a base of 4.8 metres. The proposed construction length of the dykes will be as follows: Shilak 2.19km, County Headquarters 1.87km, Market and Rubkona Town to the bridge 5.63km while Leer will be 3.4km.

This ESMP includes measures to reduce potential negative impacts; the roles and responsibilities of ESMP partners, an environmental compliance framework, reporting arrangements, an environmental monitoring plan, a capacity building program and a cost estimate for ESMP implementation.

This ESMP has incorporated stakeholders' views contacted during the engagement process in both Rubkona and Leer counties. The ESMP assigns stakeholders with different roles and responsibilities including ECRP project teams, the County Dyke Management Committees, the Contractors, and local communities.

The ECRP Project Management Unit (PMU) will be responsible for monitoring the dyke construction, including environmental compliance with the WB ESF and Laws of South Sudan.

The ESMP assigns E&S monitoring to the PMU Environmental and Social Safeguards team which will include the Environmentalist, Social Specialist, Gender Specialist, and the Lead Construction Engineer . These staff will supervise and monitor construction activities and ensure that contractors comply with requirements of the provision of the ESMP. The Supervision team will also assist in reporting and communicating with the local community. Detailed implementation and supervision arrangements are tabulated in chapter 6.

Based on the environmental and social risks and impacts identified during the assessment, the Contractor is expected to adopt mitigation measures as stipulated in the ESMP before construction commences. The community has the right and responsibility to monitor environmental performance throughout the course of construction. By doing so, the community ensures that their rights as well as public safety are protected and that the mitigation measures are established.

The ECRP seeks to achieve its PDO *to improve access to basic infrastructure and to strengthen community institutions in selected counties* by rebuilding the dykes through a ‘build back better’ approach. This approach is integrated throughout the infrastructure life cycle, specifically during stages of design, construction, and maintenance as well as incorporated in strengthening local institutional capacities for climate and disaster risk management (DRM) at the local level.

1.1. Dyke Rehabilitation Work in Rubkona

The dyke rehabilitation work will involve repair, rehabilitation and upgrade of the dyke's embankment to ensure people's safety, protect their assets, and reduce risks caused by the floods. The dykes will mitigate damage to inhabited settlements and road infrastructure that is essential for freedom of movement and the exchange of goods and services. In addition, the ECRP will provide training on Disaster Recovery Capacity Enhancement (DRCE) specifically related to dyke repair, operation and maintenance (O&M), occupational health and safety, and awareness for preparedness and management in the event of natural disasters. Furthermore, the ECRP will encourage the counties to include dyke management on their budgeting agenda as a priority infrastructure.

The proposed dyke rehabilitation in Rubkona town will extend appropriately 10km starting from the bridge to Bentiu and proceeding around the Rubkona Market. Without reinforcement, the existing dykes will deteriorate and lose their integrity with the onset of the rainy season. This will deny the community access to livelihood opportunities, i.e. fishing, crop farming and livestock grazing.

Location of the Sites of the Dyke in Rubkona Town

The land surrounding the dykes in Rubkona town is partly swampy, dominated by plants such as sedges (papyrus), reeds, and numerous grasses. It is gently sloping west east direction with varying altitudes of 398 to 400m above sea level. Other spots only showed an altitude difference of one metre! As seen in the map (page 17) Rubkona town lies north of the River Bahr el Ghazal which is a significant contributor of flood waters to Rubkona town after it bursts its banks. Its water volume is primarily from the tributaries in South Sudan and Sudan. However, there are observations by State and County officials that some of the River Nile burst its banks south of Bentiu at Panijiar County. Hence the land surrounding Rubkona town is susceptible to siltation from the River Bahr el Ghazal and surface run-offs which culminated into persistent floods.

The soils of the town in Rubkona town are the Black Cotton Soil (BCS) type. They have low water holding capacity, impermeable, highly compressible - expands so fast when it's wet and in the dry season contracts with cracks under high temperatures.

There is no protected ecosystem around Rubkona town. Hence the dyke does not transverse any sensitive ecosystem nor a settlement. Instead, the dyke will be shielding the town and its infrastructure from floods.

1.2. Dyke Rehabilitation Work in Leer

The dykes in Leer are located at Latitude: 8.3141682, Longitude: 30.1438621 and at varying elevations ranging from 398.0 to 401 metres above sea level. The land is relatively flat making it easy for flood waters to settle.

The proposed site of the dyke neighbours wetlands to the south of the town on the Leer-Adok road and along the wetland that transverses Leer town between the east and west sides. These

dykes protect the town from overflows from the wetlands, and preserve the wetlands as livestock pastures and wildlife habitats, especially birds. Leer town is estimated to have about 50,000 people. However, due to armed clashes in the rural areas and neighbouring counties, the population concentration in Leer has increased. There is a risk that the increase in town population will lead to encroachment into the town wetlands that are protected by the dykes.

Chapter Two

2.0. Policy, Legal and Administrative Framework

The policy, legal and administrative framework provides guidance and provisions for the protection and conservation of the environment and the communities. This framework complies with the Transitional Constitution of South Sudan (2011), the Environment Policy of South Sudan (2015-2025), The Draft Land Policy (2016), Forestry Policy (2019), the Land Act (2009). This framework also details the international and regional treaties and conventions and the relevant World Bank environment and social standards for the ECRP project.

2.1. South Sudan Legal and Institutional Framework

The Transitional Constitution of the Republic of South Sudan of 2011: The Transitional Constitution of South Sudan (2011) Article 41 (1) provides that the people of South Sudan shall have a right to a clean and healthy environment and (2) that every person shall be obliged to protect the environment and (3) that future generations shall have the right to inherit an environment protected for the benefit of present and future generations.

The South Sudan Draft Environmental and Protection Bill (2013) mandates the imperative for environmental protection and promotes ecologically sustainable development. Section 18 of the South Sudan Draft Environmental and Protection Bill introduces the requirement for Environmental Impact Assessments. This bill requires involvement of communities in decision-making and attempts to minimise the adverse biophysical, social and other relevant effects caused by development.

The Land Act of 2009 is also relevant. One of the objectives of the Land Act is to promote a land management system, which protects and preserves the environment and ecosystem. The Land Act reinforces the Government's recognition of customary land tenure: 'Customary land rights including those held in common shall have equal force and effect in law with freehold or leasehold rights. Moreso, the Land Act requires that the GoSS consult with local communities and consider their views in decisions about community land. The Act also gives pastoralists special protection: 'No person shall without permission to carry out any activity on the

communal grazing land which may prevent or restrict the residents of the traditional communities concerned from exercising their grazing rights’.

The Wildlife Conservation and National Parks Act (section 5) recognizes that wildlife constitutes an important national natural wealth and is part of the heritage of South Sudan and therefore wildlife needs to be conserved, protected and utilised for the benefit and enjoyment of all its people. Section 6 vests the administration and execution of the policy in a Secretariat headed by the Director General of the Secretariat of Wildlife Conservation, Environment Protection and Tourism.

The Public Health (Water and Sanitation) Act (2008) provides a legal basis for environmental protection and encourages improvement in sanitation. Key provisions include the protection of the environment and it encompasses measures to address the pollution of water and air through the enforcement of regulations and measures designed to combat pollution, protect the environment, and promote public health.

The Child Act (Act No. 10 of 2008): The Child Act prohibits child labor and provides omnibus protection for children and young persons. This act precludes children from employment in the field of construction.

The Labour Act (Act No. 64 of 2017): The Act establishes a legal framework for the minimum conditions of employment, labour relations, labour institutions, dispute resolution and provisions for health and safety in the workplace. The Act further reinforces the right to equal remuneration for work of equal value as guaranteed by the constitution. Section 6(1) of the Labour Act provides that ‘No person shall discriminate, directly or indirectly, against an employee or job applicant in any work policy or practice’. Section 6(2) also forbids discrimination by any Trade Union, Employers Association or Federation. Section 6(3) defines discrimination as ‘any distinction, exclusion or preference with the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation’ based on a series of grounds including sex and pregnancy or childbirth.

2.2. International Conventions Signed and Ratified by South Sudan

The following are international conventions signed and ratified by South Sudan and may be of importance to the successful implementation of this ESMP.

ILO Convention 138, Minimum Age. The convention provides for the possibility of initially setting the general minimum age at 14 (12 for light work) where the economy and construction facilities are insufficiently developed. South Sudan has informed the ILO that it has set the general minimum age at 18 years. South Sudan ratified the convention in 2012.

ILO Convention 100 on Equal Remuneration. The convention aims at equal remuneration for work of equal remuneration between men and women. South Sudan ratified the convention in 2012.

ILO Convention 111 on Discrimination. The convention calls upon states to enable legislation prohibiting all forms of discrimination and exclusion on any basis, including race, sex, religion, etc. South Sudan ratified the convention in 2012.

2.3. World Bank Environmental and Social Management Framework and Relevant Environment and Social Standards (ESS)

The Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development and establishes a set of Environmental and Social Standards.

The Environmental and Social Standards set out the requirements for borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The standards will: (a) support borrowers/clients to achieve good international industry practice relating to environmental and social sustainability; (b) assist borrowers/clients to fulfil their national and international environmental and social obligations; (c) enhance nondiscrimination, transparency, participation, accountability and governance; (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ten Environmental and Social Standards establish the standards that the borrower and the project will meet through the project life cycle, as follows:

ESS 1: Assessment and Management of Environmental and Social Risks and Impacts. ESS1 sets out the client's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of the dyke rehabilitation and construction, in order to achieve environmental and social outcomes.

The environmental and social assessment will be based on current information, including a description and delineation of the project and any associated aspects and environmental and social baseline data at an appropriate level of detail sufficient to inform characterization and identification of risks and impacts and mitigation measures. The assessment will evaluate the project's potential environmental and social risks and impacts, with a particular attention to those that may fall disproportionately on disadvantaged and/or vulnerable social groups; examine project alternatives; identify ways of improving project selection, siting, planning, design and implementation in order to apply the mitigation hierarchy for adverse environmental and social impacts and seek opportunities to enhance the positive impacts of the project. The environmental and social assessment will include stakeholder engagement as an integral part of the assessment, in accordance with ESS10. The client is thereby responsible for cascading compliance with standards along the chain of implementing partners, contractors and subcontractors.

ESS 2 – Labour and Working Conditions. ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. ESS2 applies to all project workers.

The Borrower will develop and implement written labour management procedures applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. ESS2 also requires a grievance redress system which allows workers to raise their grievances.

ESS 3 – Resource Efficiency and Pollution Prevention and Management. ESS3 recognizes that economic activity and urbanisation often generate pollution to air, water and land, and consume

finite resources that may threaten people, ecosystem services and the environment at the local, regional and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with the Good International Industry Practice (GIIP).

ESS 4 – Community Health and Safety. ESS4 recognizes that project activities, equipment and infrastructure can increase community exposure to risks and impacts. Since the dyke rehabilitation lies in an area (Rubkona and Leer Towns) which experienced armed conflicts in the past, this ESMP warns of possible archaeological or UXO objects from rehabilitation works and or excavations sites/ borrow pits. If the contractor found such objects, the project will trigger a Chance Find Procedure. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to dikes construction activities.

ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of borrowers to avoid or minimise such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable. While not explicitly mentioned, prevention and mitigation of different forms of gender-based violence, specifically Sexual Exploitation and Abuse, is being covered by ESS4.

ESS 5 – Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement. This ESS is not applicable since the sections of the dikes to be rehabilitated will be within the public land reserves and no physical displacement is likely or expected. There will be no construction camps, new access roads and all the black cotton soils material borrow sites will be on the public land along the riparian zone of the dyke including the existing access and maintenance corridor. It is also expected that all equipment will all work within the public land reserve. Any additional land that may be required will be sought on a voluntary basis.

ESS 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources. ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, wetlands and the biodiversity they support. All habitats support complexities of living organisms and vary in terms

of species diversity, abundance and importance. This ESS also addresses sustainable management of primary production and harvesting of living natural resources. ESS6 recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project. The potential, positive role of project affected parties, including Indigenous Peoples, in biodiversity conservation and sustainable management of living natural resources is also considered.

ESS7 - Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. ESS7 uses the term “Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities,” recognizing that groups may be referred to in different countries by different terms. An analysis by World Bank and other experts confirm that the overwhelming majority of people in the country meet the requirements of ESS7 including the majority of the ethnic groups in South Sudan as well as in the project area, namely the Dinka, Murle, and Nuer; and excluding only recent immigrants from other countries thus making this ESS relevant. Given that these IP will be the majority beneficiary, the project has developed a rigorous consultation strategy and plan that identifies means through which the project undertakes effective consultations and engagement with people identified for purposes of ESS 7 on the project design and implementation in order to meet the threshold for free, prior and informed consent (FPIC) from the affected groups is required.

ESS 8 – Cultural Heritage. ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people’s cultural identity and practice. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.

The requirements of ESS8 apply to cultural heritage regardless of whether or not it has been legally protected or previously identified or disturbed. The requirements of ESS8 apply to intangible cultural heritage only if a physical component of a project will have a material impact

on such cultural heritage or if a project intends to use such cultural heritage for commercial purposes.

The borrower will implement globally recognized practices for field-based study, documentation and protection of cultural heritage in connection with the project, including by contractors and other third parties.

A chance finds procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities. It will be included in all contracts relating to construction of this subproject, including excavations, movement of earth, flooding or other changes in the physical environment. The chance finds procedure will set out how chance finds associated with the project will be managed.

The procedure will include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence-off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of this ESS and national law; and to train project personnel and project workers on chance find procedures.

In terms of the UXO the project has taken a deliberate proactive approach to their management that is to follow the prescribed two stages which are Stage 1-to check if there is history of bomb activity on the proposed project site location which is the initial screening check and Stage 2 - If any potential risk has been identified the project recommends the adoption of the UNOPS unexploded ordnance and mine chance finds procedure. This commitment has been made on the ESMP table.

ESS9 is the only non-relevant standard for ECRP.

ESS 10 – Stakeholder Engagement and Information Disclosure. This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance and make a significant contribution to successful project design and implementation.

The client will engage with stakeholders throughout the dyke construction period and enable meaningful consultations with stakeholders on project design. The borrower will adopt and implement the existing Stakeholder Engagement Framework (SEF) proportional to the nature and scale of the project and its potential risks and impacts. The SEF also outlines the establishment of a functioning grievance redress mechanism.

OP 7.50 Projects in International Waters: This is not an ESF standard but part of the safeguards policies. The objective of this policy is to ensure that Bank financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilisation and protection of international waterways. The policy applies to projects that involve the use or potential pollution of international waterways. This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is a component of any waterway described under (a); and (c) any bay, gulf strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters. Consequently, "OP 7.50 (Projects on International Waterways)" is applicable given that some of the proposed project interventions will be implemented close to or within the White Nile River Basin and its catchment area. The White Nile River and its tributaries are considered an international waterway for the purposes of the World Bank's Operational Policy regarding Projects on International Waterways (OP 7.50;). Consequently, the project is under obligation to notify all the riparian countries, a process that was concluded during project appraisal.

World Bank Group Environmental, Health, and Safety Guidelines

World Bank-financed subprojects should also take into account the World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines"). The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. The EHS Guidelines contain the performance levels and

measures that are normally acceptable to the World Bank Group and are generally considered to be achievable in new facilities at reasonable costs by existing technology. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to the World Bank, become subproject- or site-specific requirements. This subproject shall conform to these Guidelines.

Chapter Three:

3.0. Subproject Description

3.1. Location of the Dykes

The dykes in Rubkona County, Unity State lie at 399m above sea level (9°16'47.1"N and 29°46'41.9"E). This length of dyke includes sections labelled Rubkona County HQ (1.87 km), Rubkona Market (5.63 km), and Shilak (2.19 km). The Rubkona Market section on the western side of Rubkona town will protect the main market and the main road between Bentiu and Rubkona. The Rubkona County HQ and Shilak sections safeguard the settlements and administrative centres from the flood water on the eastern side of the town. The total length of the dyke rehabilitation will be appropriately 10km.

The map below shows the extent of the flooding and dyke locations in Rubkona town. Satellite imagery from UNITAR shows the extent of the floods as blue coloured areas based on data recorded in October 2021. The surrounding land is vegetative, albeit submerged by floodwaters. The lines indicate the location of existing dykes plus the proposed alignment of a new southern dyke. In coordination with partners in Rubkona, ECRP has proposed the rehabilitation and strengthening of dykes around Rubkona town.



In Leer, the main areas proposed for dyke rehabilitation are relatively flat, with land elevations ranging from 398 to 401 metres above sea level. The proposed site of the dyke neighbours wetlands to the south of the town on the Leer-Adok road and along the wetland that transverse Leer town between the east and west sides. These wetlands will not be disturbed by the dyke construction work. The wetlands serve as pastures for pastoralists and provide the community access for domestic water purposes, livestock (cattle, goats and sheep) and habitat for a variety of birds.

The map below shows the dyke locations in Leer town on the east (dotted in blue 0.8km) and west side (dotted in red about 2.6km).

South Sudan

Dikes of Leer Town



3.2. Proposed Scope of Work

Design considerations include: site access (ROW) to undertake the rehabilitation works and monitoring of the sites throughout the flooding period as well as managing the natural flow of water, and encroachment on other land use. These considerations include public right to property, minimum dimensions of dykes required to maintain soil stability, settlement, seepage, permeability and erosion, and the availability of rehabilitation materials and construction equipment. The proposed construction sections of the dykes will be as follows: Shilak 2.19km, County Headquarters 1.87 km, Market and Rubkona to the bridge 5.63 km while Leer is 3.4km.

The main priority is to stabilise the existing dykes by ensuring the reinforced dykes have minimum side slopes 3 times wider than their height (3H:1V). This imperative dictates the final width and height of the dykes. These dimensions will improve stability of the dykes and contribute to the sustainability of the structures. The soil characteristics of available rehabilitation material from the designated borrow pit will be checked for permeability, stability, the potential for seepage, settlement and compressibility. The material utilised will be black cotton soil (BCS), whose high clay content makes it an excellent structural material for dyke construction. Clay soils are sturdy, inflexible and coherent. In contact with water, BCS's characteristics and fine soil particles inhibit permeation. The clay covering the bank will however be exposed to air and sun, which changes its moisture content making it drier and prone to erosion from human activities and moving water. Covering the dykes with sandbags mitigates erosion and increases the durability of the surface for community access points and boat or canoe docking locations. The rehabilitation works will open shallow borrow pits along the riparian side of the dyke to facilitate the dyke work rehabilitation and source any other material from other already existing burrow sites along the dyke used continually for routine dyke rehabilitation works. All these borrow sites will be restored once the rehabilitation is finalised. Much of the work is going to be mechanised and supported by local labour living around the areas identified for rehabilitation. As such, no construction camp will be set up; however several storage containers will be located along the dyke for the storage of tools, equipment and other construction material.

Due to the forecast of higher rainfall this year and the high amount of residual flood water, the cross sections of all existing dykes will be increased so that there is at least 1.5 metre margin between the crest and current water level. South Sudan has limited hydrological data, which means that the free board applied for the dykes has a margin of uncertainty in the estimated flood stage.

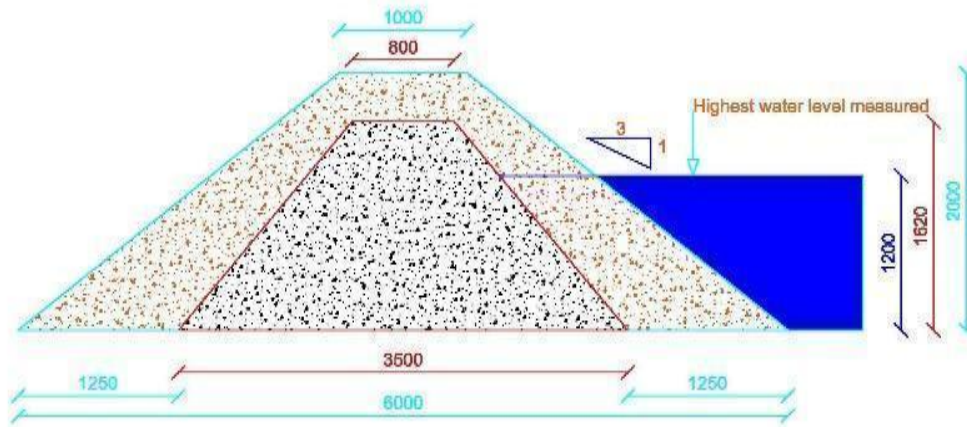
The 2021 flood levels in Rubkona and Bentiu towns were measured locally by IOM, while in Leer, the maximum flood water height was based on information gathered from community meetings. With floodwaters persisting in large areas of the Western Flood Plain, the quantity of water accumulated during the 2022 rainy season has a large surface area to disperse over before an observable increase in static flood water levels.

In Leer, the flood water has receded significantly; the proposed increase in the height of the dyke was based on the estimated observed maximum flood water level as reflected by the current height of the dykes. As overflow did not occur at this height, the construction plans foresee a safety factor ranging from 1.6 to 2 metres in height and a base of 2 metres with reasonable margins between the crest and current water level. The target is to raise the height to an average of 1.6 metres and a base of 4.8 metres. The factor of safety will accommodate both the fluvial and pluvial flood water levels.

In Rubkona, the average height of the existing dykes ranges from 1.4 to 1.8 metres and a base of 3.5 metres. The base needs to be widened to increase stability, prevent seepage, and withstand erosion from rainfall and settling. The shaded inner core represents the current cross-section of the dykes, while the outer section is the planned section of the proposed rehabilitation work. Some sections of this dyke meet the planned free board, the margin between the water level and the crest of the dyke, and therefore the focus will be on widening the base.

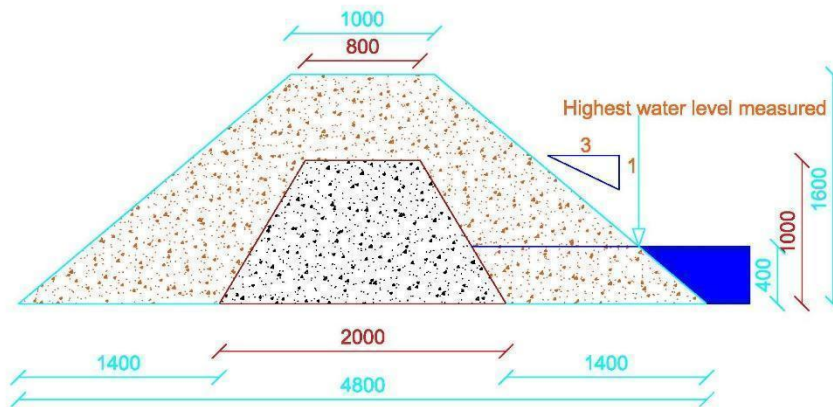
3.2.1. Shilak, Market and County Headquarters Dyke Sections

The current dykes average a height between 1.4 to 1.8 metres and a base of 3.5 metres with some areas having adequate margins between water level and the crest. However, the base requires widening for more stability, to prevent seepage and to withstand erosion from rainfall and settling. The shaded inner core represents the current scope of dykes while the outer section is planned rehabilitation work.



These dykes have access space running along them; however, they require backfilling and grading to enhance access during rehabilitation, maintenance and monitoring during and after the rainy season.

3.2.2. Rubkona Town to Rubkona Bridge Dyke Sections



This dyke consists of sections that are within 1 metre in height and a base of 2 metres with reasonable margins between the crest and current water level. The target is to raise the height to an average of 1.6 metres and a base of 4.8 metres.

3.2.3. Leer Dyke Sketch

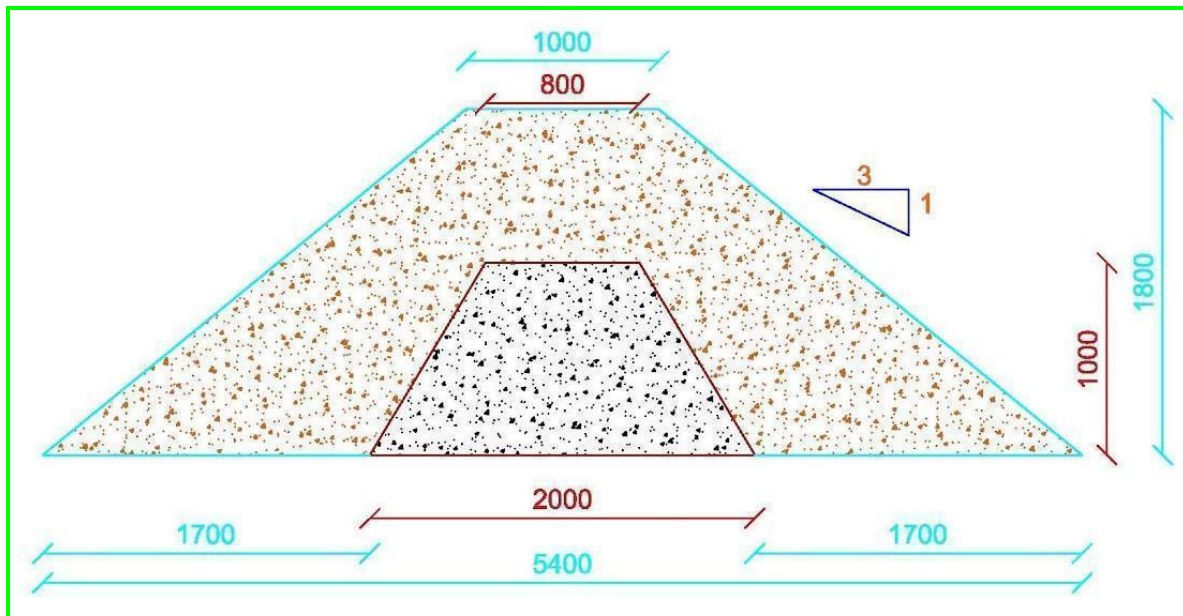
Leer town is divided into two settlements on both banks of a seasonal tributary of River Nile. The floodwaters that threatened the south-west side of Leer town do not connect with the

tributary through Leer town. Instead, these waters take a circuitous path from Panyijar County and flow north into low lying swamp areas.

The 2.6 km section protects the south-west settlements and markets, while the 0.8 km section is for Eastern Leer town for a total length of 3.4 km. Assessment teams observed that sections of the dyke had been removed or breached; signs of seepage from the dyke were not observed. From the field assessment, it was noted that some areas without dykes were not flooded due to their high elevations. Field assessments observed a predominance of the black cotton soils (BCS) in the vicinity, which is suitable for the construction of dykes.

Although floodwaters have receded, pending rainfall this year within the Nile Basin, the height of the dyke will need to be increased. The relevant county administrators were interviewed to ascertain the extent of flooding and determine the maximum water level reached during the last flooding.

In Leer, a typical cross section for the dyke is presented below. The height ranges from 1.1m to 1.8m depending on the elevation at that section. A minimum side slope shall be 2:1 but the recommended side sloped is 3:1. A gradual side slows down erosion and precludes a host of dyke failures.



Chapter Four

4.0. Stakeholder Engagement and Consultation

Public consultation was conducted in Rubkona from 29-31 March 2022 and in Leer from 1-4 April 2022. ECRP representatives consulted local authorities, elected officials, women, youth, and community members directly affected by the floods. The local authorities and community members/ beneficiaries unanimously agreed to the proposal to reinforce the dykes in order to safeguard their towns from flooding and improve environmental sanitation.

A review of the project was undertaken through engagement with PDC, BDC and county local authorities. In conjunction with the local government authority in Rubkona County, ECRP staff surveyed and consulted beneficiary populations from 28 March to 4 April 2022 regarding the reallocation of subproject funds for dykes construction in Rubkona and Leer.

The consultations, led by the County Coordination Team (CCT), concluded that the funds should be reallocated to rehabilitate the dykes around Rubkona town, procure four trash pumps, and provide hand tools and sandbags for community-led flood management measures.

According to government officials and humanitarian organisations on the ground, the primary purpose of flood management in Rubkona town is to drain out water from residential settlements, government premises, markets and community livelihood areas, notably vegetable gardens and surrounding pastures to the town. The land reclamation will help resettle 1000s of households, who are currently living in congested homesteads and are at high risk of contracting communicable diseases.

The floods have affected an area of 25 to 30 km in radius from Rubkona town, extending into the surrounding rural areas. Hence, both upstream and downstream villages are submerged by flood waters, but their conditions have not been assessed due to limited access from the town outwards as roads are cut off by floods.

As observed, the current structure of the dykes constructed in 2021 will not withstand the upcoming rainy season. The proposed rehabilitation entails expanding the dykes and increasing its crest to the desired height above flood level to about 7.5 m in width and 2.5 m in height. Since

the floodwaters meandered from the River Bahr el Ghazal, the impact on the river's ecological functions and water flows shall be determined by a further hydrological study on the composition of the downstream riverbed.

The assessment in Leer town was conducted from 1-4 April 2022 when the community members gathered to receive food aid. Most of the town residents and internally displaced persons have congregated in Leer town. Access to food and potable water are limited. Local community members report that their livelihoods have been affected as access to agricultural land and gardens has been lost due to the flooding.

The assessment team engaged the Leer County local government leadership, notably; the County Commissioner, RRC Director, Executive Director, Dyke Administrator and other junior officials during the assessments from late February and early April.

The County officials supported the ECRP team measure the distance of the dykes surrounding Leer town. The County Commissioner emphasised the urgency of the situation as work needs to begin before the rains start to prevent further damage to the existing dykes.

According to the County Commissioner, the project beneficiaries will be informed of the changes from planned subproject implementation under the Boma Priority List to the reallocation of funds for dykes. The Commissioner stated that local authorities have engaged proactively with community members in preparation for the upcoming rainy season.

The County officials stated that the existing dykes protect areas designated for human settlement as well as areas planned for public utilities such as market sites, schools and other government installations. The government and community support ECRP interventions on the western side of Leer town, where 2.6 km of the dyke will be rehabilitated and 0.8 km dyke on the eastern side of Leer town.

Stakeholder Consultation Summary

Summary of the key Issues raised during the stakeholder engagement process

S/N	Engagement Level and Activity	Issue raised	Feedback provided/Resolution
1	County Level -Project inception and introduction	Many communities and project stakeholders raised concerns of the integrity of the dyke walls	-The ECRP team assured the stakeholders that their concerns have been acknowledged and will be forwarded to the designers to make sure that the structural integrity of the dykes is maintained.
2	County Level -Project inception and introduction	Lack of trust regarding the implementation of the dykes since the sub projects were promised by many organisations and nothing much is in place.	There is a need to build trust across project Locations by timely implementation of the chosen subprojects.
3	Payam and Boma Level -Stakeholder Engagement Meetings	PDC and BDC members demanded incentives for participating in consultation meetings	-The ECRP team informed the PDCs and BDCs about the key roles they play for the successful implementation of the subprojects in their various communities. -The meetings were held for a period of 1-2 hours only to prevent over-sitting and exhaustion.
3	Community Level -Stakeholder Engagement	-Fear of communicable diseases as a result of flooded water -Need for canoes to navigate flooded areas	-The ECRP team ensured that communities were consulted regarding land ownership and their preferred channels for raising project related grievances.

	Meetings	-Land ownership	-Community Health awareness will be done to stakeholders
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Risks and mitigation measure

Land in Rubkona and Leer on which the dyke will be rehabilitated is owned by the local government, so the project will not affect private land. The local government will advise the specific locations where the dyke will be rehabilitated. The government does not anticipate relocating people, nor will it expect cultural and environmental issues to arise, as the area is not inhabited by people and or animals. However, women in Leer who have vegetable gardens might have access challenges, but they confirmed they can walk over the dyke to access their gardens. In addition, as the fish population in the flooding water may be disturbed, fishermen will have to go closer to the river to fish. But they can rely on their indigenous knowledge to find fish.

As the rehabilitation of the dyke is in the interest of the community in both Leer and Rubkona conflict is not expected. In addition, noise, waster, dust and vibration caused by the construction would not be an issue as the site is on the outskirts of the town and communities are familiar with such activities that have taken place in the past (e.g. UNMISS rehabilitation of the dyke).The community has expressed their willingness to allow technical and skilled persons from other communities to work on the dyke. However, communities insist on ECRP to source local individuals for unskilled labour. In addition, they emphasised the employment of workers should be coordinated with RRC and BDCs to ensure equal gender representation is guaranteed. Stakeholders agreed employment for skilled and unskilled labour should be based on consent and exclude children under 18 years.

Block leaders from the community in Leer are in-charge of dyke monitoring and repair, through mobilising their respective block residents. However, as the dyke has dramatically deteriorated, especially the last two years, it has overwhelmed the capacity of the community and their block leaders to maintain the dyke. Therefore, stakeholders have suggested the formation of a committee to manage usage and access issues that may arise. For example, the committee to prevent cutting the dyke for purposes of avail water for livestock.

Chapter Five

5.0. Environmental and Social Risks and Impacts of the Proposed Dykes Rehabilitation

The environmental and social risks associate to the project include 1) soil and water impacts, 2) emission of gases, dust and noise; 3) community health and safety; 4) labour and occupational Health and Safety (OHS) risks, 5) risk to land, flora and fauna and 6) risk to cultural and religious site. These impacts have been identified following: review of the proposed rehabilitation works, environmental and social screening of the area for rehabilitation works and stakeholder consultations and engagements.

The preparation works will involve vegetation clearance at the dyke site and the borrow pit. The project recommends that the contractor in consultation with the County Dyke Management Committee will ensure that vegetation along the dyke sections and within the borrow pit are restored. This may involve regrassing over the and near the dykes, and tree planting at the scars of the borrow pits. This is to allow deliberate regeneration of soils, plants, micro and macro organisms that are vital for ecosystem restoration. The rehabilitation work will increase risk of noise, vibration and dust emissions from civil works undertaken by heavy equipments and machinery like excavators, backhoes, compactaction rollers, generators etc including blasting at quarry and burrow sites; Risk of water and soil pollutions as a result of poor soil management and poor handling and disposal of general, hazardous and liquid waste from construction works. These may originate from the construction camps, construction yard and fuel stores, hazmart storage areas etc; Occupational health and safety hazards and incident potentially from operation and handling of construction equipment by workers, failure to follow safe working procedures by employees, failure to secure active construction sites etc

Soil and Water risk

Given that earth moving will be a critical aspect of this project, the project anticipates impact on soil and water systems. Potential water and soil pollution may result due to improper waste

management systems, poor handling of oil and fuel, poor water drainage from construction sites are some of the risks. In general the contractor will maintain high standards in general housekeeping on site to reduce potential impact on soil and water. The project will train workers in safe segregation of waste materials and ensure the contractor covers material storage areas to avoid soil depletion. To limit water drainage into the community the contractor will identify and select specific areas for washing that are not free-draining. It will also put in place an appropriate waste disposal system, including the reuse of waste material. It will also identify and store appropriately all material or hazardous substances like fuel or chemicals and provide solutions to remediate unforeseen leakage and spills. It will avoid servicing and refuelling at the site and use protective foils during possible vehicle refuelling and maintenance at the construction site. In case of a spill, an absorbing material will be provided. Other potential risks related to soil include erosion of embankment slopes, massive extraction of soil from quarries, loss of topsoil from access roads and water impacts that may cause turbidity downstream. ECRP will undertake excavation in such a way that the slope of the embankment should be within right of way. It will be remediated by replanting grass and/or reforestation. The contractor should use erosion control measures such as revegetation of disturbed areas and placing of tarps. In addition, the project will limit soil extraction within the quarry site which will be designated by the County Administration. The contractor must obtain valid environmental permits and conform with the requirements of environment protection, health protection and human safety. To mitigate the potential impact of water, an appropriate erosion and sediment control measures (e.g. silt fences) will be in place to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.

Emission of Gases, Dust and Noise

Another potential risk is the emission of gases, dust and noise from the operation of vehicles and heavy machinery during construction. Although impact to be limited and temporary during excavation and embankments work, dust and increased levels of nitrogen oxide (NO_x) and sulphur oxide (SO_x) from construction equipment exhausts is expected. Impact can be mitigated by following general environment mitigation measures (GEMM) procedures, including the watering of transportation roads, operating vehicle and machinery in good technical conditions and limiting the number of hours machines and vehicles operate.

Community Health and Safety

There are potential risks to community health and safety, including road traffic accidents, unexploded ordinance and accidents at the quarry site. In addition, the influx of workers may expose women from the community to gender-based violence (GBV) and sexual exploitation and abuse (SEA). The contractor will maintain high standards in general housekeeping on site. It will be guided by the “Unexploded Ordinance and Mine Chance Find” procedure in case it encounters mines and UXOs. In order to mitigate road traffic accidents, the project will display adequate warning signs and ensure driver licences, logbooks and insurance are updated. In addition, it will restrict access to construction sites to non-authorized persons, while scheduling traffic activities to avoid peak hours on local roads if feasible. In addition, it will fence the quarry site to prevent people and livestock trespass. The effective grievance and redress mechanism that will target the community will be in place to report and address issues related to GBV and SEA.

Labour and Occupational Health and Safety (OHS) Risks.

The project considers labour risks that may arise due to work related injuries and/or discontent as a result of maltreatment. ECRP will put in place mitigation measures and demand workers to adhere to the measures, including provision of Personnel Protection Equipment (PPEs) and installation of warning signs. As a minimum foot plus head, hand, ear, eyes protection, depending on working position will be employed. The project will provide health and safety training to contractors and workers risks and mitigation measures. It will adopt a construction management plan that will be developed by the contractors and will be implemented. In addition, ECRP will establish a grievance redress mechanism to address potential maltreatment and discontent. All project workers will be informed on available grievance redress mechanisms upon their employment or engagement.

Risk to Land, Flora and Fauna

With inadequate land tenure systems in South Sudan, issues related to land can be a potential risk. The dykes under this project will be constructed on public land reserves, which is under the County government. The project has secured written consent from the Commissioners for both Rubkona and Leer counties to rehabilitate the dyke. In addition, the County Administration pledged to control encroachment as a result of settlement expansion towards the dykes. As there are no settlements around the dyke, ECRP does not anticipate physical displacement of any

household. In addition, the project does not anticipate a significant loss to fauna and flora. A minimal loss to flora can occur during earth moving at quarries and embankments, which will be reduced, particularly through re-vegetation and avoiding the disturbance of nearby wetlands.

Risk to Cultural and Religious Sites

ECRP will avoid any sites that have an archeological, cultural or religious significance. If cultural or archaeological items are found during soil excavation and dyke embankment works, the contractor shall stop work and trigger The Chance Find procedure.

5.1. Environmental and Social Risks and Impacts, Mitigation and Monitoring

Potential risk and Impacts	Mitigation measures	Method of Monitoring	Location	Performance indicator	Responsibility	Time frame	Cost estimate (USD)
PRE-CONSTRUCTION STAGE							
Tender documents prepared with access to or use of the this ESMP	Tender documents will include a copy of the mitigation and monitoring plan ESMP, which shall be included in the safeguard clauses of the Technical Specifications in the contracts and commitment to comply with Lender Requirements	Tender documentation	Juba	Number of tender documents provided to contractors	ECRP, County Dyke Management Committee	Before recruiting of contractor	
Planning/ Designing Ensure compliance with construction legislation of South Sudan	Acquire construction permit Provide Water and civil spoil management guidelines if sub projects are executed near surface watercourses especially the massive flood water surrounding Rubkona town that will be drained into River Bahr el Ghazal.	The contractor will obtain a rehabilitation permit and water management guideline for the surface drainage works of massive waters surrounding Rubkona town	Rubkona , Leer Towns	Number of awareness on rehabilitation works	Contractor	Before starting work	
Planning/ Designing Potential damages to the existing infrastructure and facilities.	Preserving existing local infrastructure and working in cooperation with relevant institutions at all levels of authority.	Inspection reports	Rubkona, Leer	Number of site inspections	Contractor and County Dyke Management Committee		

Reduced access through the area where the works are executed.	Plan the relocation of equipment at times when daily traffic is not jammed; Provide alternative passage for pedestrians and vehicles in cooperation with local authorities Avoid roads through inhabited areas especially near schools and hospitals; Prepare and implement the Construction Site Management Plan that incorporates good construction practice measures.	Site inspection report	Rubkona , Leer Towns	Number of site inspections	Contractor	Weekly	
CONSTRUCTION PHASE							
Materials supplies: Soil borrow pit; disturbance of vegetation, wetland edges; water quality	<ul style="list-style-type: none"> ● Use the approved quarry/ borrow pits sites shown by the county local government to avoid encroachment into river banks and rivers surrounding wetlands. ● After exploitation ensure borrow pits are remediated. ● Replanting vegetation e.g. grass, trees,... 	Inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor and County Dyke Management Committee		
Dust, Noise and gases from transportation of Material e.g. soils, sand	<ul style="list-style-type: none"> ● Impact can be mitigated by following general environment mitigation measures (GEMM) procedures. ● Reduce source of dust emissions at construction sites by watering transportation roads during dry and windy conditions. <ul style="list-style-type: none"> ○ Generally keep roads in good condition. ○ Cover truck loads with carpets to avoid dust blow. 	Inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor	Weekly	

	<ul style="list-style-type: none"> • Using equipment and vehicles in appropriate technical conditions. • Ensure vehicles and equipment are switched off when not in use. • Limit the hours of operation for specific pieces of equipment or operations. 						
Potential water and soil pollution from improper material storage, management and usage, including waste disposal	<ul style="list-style-type: none"> • Organise and train workers on safe segregation of waste materials during collection, transportation and disposal. Make sure that the contractor will cover material storage areas; • Select areas for washing that are not free draining directly into watercourse • Maintain high standards in general housekeeping on site. • Identify and store appropriately all material or hazardous substances like fuel or chemicals and provide solutions to remediate unforeseen leakage and spills. • Dispose waste material at authorized location protected from washing out, should be marked in the site plan • Enforce appropriate waste management practices <ul style="list-style-type: none"> • Give priority to reuse of waste material upon disposal. • Collect and segregate wastes and ensure safe storage and in line with legal requirements. <p>Gazette a waste disposal site</p>	Site inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor	Weekly	

<p>Poor handling of oils, fuels might cause spilling into the nearby wetlands and settlement during maintenance , repairs and refuelling at the rehabilitation site.</p>	<ul style="list-style-type: none"> ● Maintain high standards in general housekeeping on site. ● Identify and store appropriately all material or hazardous substances like fuel or chemicals and provide solutions to remediate unforeseen leakage and spills. ● Avoid servicing and refuelling at the site. ● Ensure proper handling of lubricants, fuels and solvents while maintaining the equipment and work vehicles. ● Use protective foils during possible vehicle refuelling and maintenance at the construction site. ● Provide absorbing material in case of fuel spills. ● Used oiled materials and agents should be managed in line with the Waste management report. 	<p>Site inspection reports</p>	<p>Rubkona , Leer Towns</p>	<p>Number of site inspections</p>	<p>Contractor</p>	<p>Weekly</p>	
<p>Potential pollution of soil and water due to the drainage of waste waters from the construction site</p>	<ul style="list-style-type: none"> ● Implement best practices for water management, including reusing wastewater wherever feasible and restricting soil excavation during periods of intense rainfall. ● Installation of ecological toilettes for workers 	<p>Construction camp inspection</p>	<p>Rubkona , Leer Towns</p>	<p>Number of site inspections</p>	<p>Contractor</p>	<p>Weekly</p>	

<p>Population at increased risks of traffic accidents and construction works to population.</p>	<ul style="list-style-type: none"> ● Ensure adequate warning signs, protective fencing etc. ● Observe traffic rules. ● Clean construction waste from the construction site when closing the construction site. ● Provide medical emergency plan for workers and community ● Ensure driver licences, logbooks and insurance are updated ● Schedule traffic activities to avoid peak hours on local roads if feasible. ● Ensure safe driving by Project personnel, e.g. through training/induction/incentives (best driver awards). ● Restrict access to construction sites to non-authorized persons 	<p>Implement the Construction Site Organisation Plan.</p>	<p>Rubkona , Leer Towns</p>	<p>Number of site inspections</p>	<p>Contractor</p>	<p>Weekly</p>	
<p>Possibility of encountering an archaeological site</p>	<ul style="list-style-type: none"> ● Avoid any cultural or religious sites ● If an archaeological site is encountered such as a graveyard, the Contractor will immediately suspend the Works and inform the project, county authorities (trigger Chance Find Procedure) 	<p>Chance Find Procedures in place</p>	<p>Rubkona , Leer Towns</p>	<p>Number of cultural items found</p>	<p>ECRP, Contractor, Community Representatives and County</p>		
<p>Erosion of embankment slopes</p>	<ul style="list-style-type: none"> ● Excavation and/or filling will be done in such a way that the slope of the embankment should be within right of way. The Contractor should use erosion control measures such as revegetation of disturbed areas and placing of tarps. The Contractor 	<p>Site inspection</p>	<p>Rubkona , Leer Towns</p>	<p>Number of site inspections</p>	<p>Contractor, County Dyke Management Committee</p>	<p>Weekly</p>	

	shall stabilise the cleared areas not used for repair / reconstruction activities with vegetation or with the appropriate surface treatments as soon as practicable following completion of activities.						
Massive extraction of raw materials - soils	<ul style="list-style-type: none"> • Limit soils extraction within the quarry site. • Contractor must obtain valid environmental permits and conform with the requirements of environment protection, health protection and human safety. • Limit excavation to areas designated by the County 	Site inspection	Rubkona , Leer Towns	Number of site inspection	Contractor, County Dyke Management Committee	Weekly	
Potential water impacts	<ul style="list-style-type: none"> • Establish appropriate erosion and sediment control measures (e.g. silt fences) to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers. • Minimum drainage work for excessive flood waters only within the embankment site, causing temporary turbidity. Drainage depth will be less than 2m. A properly organised waste disposal is a mandatory requirement for the Project. 	Site inspections	Rubkona , Leer Towns	Number of site inspections	Contractor, County Dyke Management Committee	Weekly	

Impacts on land use/ settlements expansion	<ul style="list-style-type: none"> The dykes will be constructed on public land reserves. There will be no physical displacement of any household. The county administration pledged to control encroachment as a result of settlement expansion towards the dykes. 	Site inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor	Weekly	
Flora and fauna in the surrounding towns and wetlands	<ul style="list-style-type: none"> Minimal loss to fauna can occur during material excavation at quarries and embankments. Impacts can be offset or mitigated by following GEMM procedures. Wetlands nearby will not be tempered with, hence no negative impact. 	Site inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor, County Department of Forestry	Weekly	
Loss of topsoil due to access roads, quarry sites and work areas.	<ul style="list-style-type: none"> Remediation by replanting grass and or reforestation 	Site inspection reports	Rubkona , Leer Towns	Number of site inspections	Contractor, County Department of Forestry	Once	
Risk to community health and safety (ESS4) e.g. traffic and road safety risks, accidents at barrow pits, UXOs, mines and explosive devices	<ul style="list-style-type: none"> Follow “Unexploded ordnance and mine chance finds procedure. Health and safety risks posed by the influx of workers or people providing support services into an area are almost considered negligent, while Gender-Based Violence (GBV) or Sexual Exploitation and Abuse (SEA) of children, or communicable diseases are not anticipated in relation to the project. 	Site inspection reports GBV action plan Contractor code of conduct on PSEA	Rubkona , Leer Towns	Number of site inspections	Contractor, County	Weekly	

	<ul style="list-style-type: none"> ● Fence the quarry site to prevent people and livestock trespass ● Preparation of all aspects of Construction H&S Management Plan (OHS, community safety plan, traffic management plan, hazardous materials safety plan, training programme, emergency preparedness and response etc.), Traffic Management Plan. 						
Labour risks of injuries. Workers may raise their concerns (safety, discontent, maltreatment or else) through the Grievance Mechanism.	<ul style="list-style-type: none"> ● Establishment of a worker specific grievance redress mechanism for project workers. The project worker is entitled to give suggestions, remarks and information regarding health and safety at work. The project workers should be informed on available grievance redress mechanisms upon their employment or engagement. 	Site inspection report	Rubkona , Leer Towns	Number of site inspections	Contractor, ECRP	Weekly	
Occupational Health and Safety Risks	<ul style="list-style-type: none"> ● Provide Health and Safety training to contractors and workers on the main risks on workers' health and safety related to the workplace, the safe work practices, the emergency procedures and the requirement of incident reporting. ● Ensure the use of Personal Protective Equipment (PPE) tailored to the conditions workers are exposed to. ● As a minimum foot plus head, hand, ear, eyes protection, depending on working position. ● Demand from all workers to abide 	Construction management Plan, Incident reports	Rubkona and Leer	Number of site inspections	Contractor	Weekly	

	by the Protection at work measures; Provide PPEs; Install warning signs at the construction site; adopt a construction management plan.						
OPERATION AND MAINTENANCE PHASE							
Handover the dykes County authorities	Provide detail product design and lecture on repair and maintenance of dikes	Dyke Operation and Repair Manual	Rubkona , Leer Towns	Handover report	Contractor/ IOM	Once	
Water logging along the dykes may become a breeding ground for vectors	Provide for drainage from runoff from the dyke edges	Site inspection	Rubkona , Leer Towns	Report of site condition	Contractor/ IOM	Monthly	
Risk of vandalising dikes	Erect crossing points for people and livestock	Site inspection	Rubkona , Leer Towns	Completion report	Contractor, IOM	Once	

5.2. Environmental Mitigation Measures for Dyke Rehabilitation Work

- Do not align the dyke to transverse any sensitive natural resources in the project area including but not limited to patches of sensitive natural habitat, bird colonies, and wetlands, unique plant communities etc. (consult with local nature protection authorities).
- Identify local access routes through and around cultivated land and pasture, e.g. cattle routes to avoid and minimise community interphase with the dyke construction equipment
- Minimise requirements for temporary or permanent alteration of lands outside the embankment right of way.
- Dredging for embankment materials should occur only within mapped areas of the existing dykes.
- Provide for zones of preliminary accumulation of wastes that will cause no damage to the vegetation cover and other components of the environment.
- Transport and disposal of construction debris and spoils in approved paths and disposal sites.
- Delineate access roads / work areas carefully and prevent their expansion.
- Use closed/covered trucks for transportation of construction materials.
- Clean the surrounding area from dust by water sprinkling, removal of excess materials and cleaning of sites upon completion of activities.
- Revegetation of the quarry site after completion of construction and repair works.
- Arrange necessary preservation measures (establish protection zones, by-pass these areas during transportation and other).
- Cease the works as soon as historical and cultural monuments are encountered during earthworks and provide relevant information to the County Local Authorities.

5.3. Occupational Health and Safety (OHS) Measures

The Contractor should undertake an OHS risk assessment, prepare and train workers on:

- Occupational health and safety management plan to manage any hazards presented by all project activities;
- Method statements and safe working procedures for the various tasks and activities

proposed.

- Liquid waste Spill Response Plan especially for engine oils during engine servicing, transportation of diesel fuels and fuel storage facilities on site.
- Fire Emergency Response Plan (fire and explosion hazards, identify evacuation routes) especially at construction camp, embankment and quarry site, explosive storage area;
- Traffic Accident Response Plan
- Structure Collapse Preparedness and Response Plans
- Flooding preparedness and response plan
- Unexploded ordnance preparedness and Response Plan (which will include Unexploded Ordnance Chance Finds Procedure
- Minimum content of plans - Organisational structure, Responsibilities, Communication, Procedures, Training, Resources.
- When required by the National Legislation, the Contractor is obliged to consult relevant Institutions in the county and obtain approval for all statutory permits..
- Security personnel Code of Conduct and awareness training
- Avoid construction at night when noise is loudest. Avoid night-time construction using heavy machinery, from 22:00 to 6:00 near residential areas.
- No discretionary use of noisy machinery within 50m of residential areas and near institutions, manual labour can be used at this point.
- Good maintenance and proper operation of construction machinery to minimise noise generation.
- Where possible, ensure non-mechanized construction to reduce the use of machinery
- Undertake regular maintenance of construction machines.

Cost Estimates

The scope of prescribed mitigation measures for the construction of the dykes should correlate with good environmental practices during construction. It is the contractor's obligation to include cost implementation of environmental mitigation measures in budget estimates. The contractor will be required to provide a short statement that confirms that:

- The ESMP conditions have been costed into the bid price

- The Contractor has a qualified and experienced Environmental Health and Safety specialist reporting to the senior most person in the organisation and responsible for the Environmental Health and Safety compliance requirements of the ESMP
- The Contractor and its subcontractors will comply with Republic of South Sudan national laws and Lender requirements.

5.4. Grievance Redress Mechanism for The Dyke Construction Work

A Grievance Redress Mechanism which already is functional in the project will be implemented to ensure that all complaints from local communities are dealt with appropriately, with corrective actions being implemented, and the complainant being informed of the outcome. It will be applied to all complaints from affected parties. The contractor will use the project's grievance uptake form available at the field office.

A specific grievance redress mechanisms for employee's complaints has been established and is already addressing workplace concerns specifying procedures as to whom a project worker should lodge the grievance, the time frame for receiving a response or feedback and steps to refer to a more senior level, while allowing for transparency, confidentiality and non-retribution practices. The GRM Manual is already in use in the project and is made available to the contractor as one of the project key documents at bidding stage.

The mechanism should foresee the procedure that at least:

- Specifies to whom the employee should lodge the grievance;
- Refers to the time frame allowed for the grievance to be dealt with;
- Allows the employee to refer to a more senior level within the organisation if the grievance is not resolved at the lower level;
- Includes right to representation; guarantees non-retribution practice;
- Does not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration/dispute resolution procedures, if the grievance is not resolved within the organisation;
- Provides for anonymous complaints to be raised and addressed.

Chapter Six

6.0. Implementation Plan for the ESMP

6.1. Institutional Arrangements and Roles

Category	Roles and Responsibilities
World Bank	<ul style="list-style-type: none"> ● Overall quality control of the ESMP, implementation supervision and provision of technical support and guidance. ● Recommend additional measures for strengthening the management framework and implementation performance ● Supervising the application and recommendations of sub- project ESMPs.
ECRP PMU Safeguards Team	<ul style="list-style-type: none"> ● Review all ESMPs prepared by the ECRP Safeguards team and ensure adequacy under the World Bank Environmental and Social Framework. ● Ensure that the project design and specifications adequately reflect the recommendations of the ESMPs ● Coordinate application, follow up processing and obtain requisite clearances required for the project ● Prepare compliance reports with statutory requirements ● Develop, organise and deliver training program for the project staff, the contractors and others involved in the project implementation ● Review and approve the Contractor’s Implementation Plan for the environmental measures, as per the ESMF, the ESCP and this ESMP ● Liaise with the Contractors and the IOM team on the implementation of the ESMPs ● Liaise with various national government and state government agencies on environmental regulatory matters ● Review the performance of the project through an assessment of the quarterly and biannual environmental and social monitoring reports. This will be done by the IOM Field Engineers with support from the Safeguards team ● Provide a summary of the same to the Project Manager, and initiate necessary follow-up actions ● Timely reporting of near misses, incidents, accidents ● Participating in incident investigation and ensuring lessons learned are communicated and remedial corrective actions closed.
IOM	<ul style="list-style-type: none"> ● Management, implementation, monitoring and compliance of the ESMP, and any approval conditions, including construction supervision and performance of project staff, contractors and subcontractors. ● Review of ESMP performance and implementation of corrective actions ● Apply “stop work procedures”, in the event of breaches of ESMP conditions that may lead to serious impacts on local communities, or affect

	<p>the reputation of the Project</p> <ul style="list-style-type: none"> ● Ensure effective communication and dissemination of the content and requirements of the ESMP to contractors and subcontractors. ● Assisting the contractor with implementation of ESMP sub-plans. ● Ensuring compliance to all project social commitments, including implementation of the social management plans ● Report environmental performance of the project directly to the PMU. ● Prepare quarterly safeguards reports summarising Project activities, as required ● Representing the Project at community meetings ● Ensuring effective community liaison and fulfilling commitments to facilitate public consultation throughout the project cycle ● Establish dialogue with the affected communities and ensure that the environmental and social concerns and suggestions are incorporated and implemented in the project ● Timely reporting of near misses, incidents, accidents and dangerous occurrence ● Participating in incident investigation and ensuring lessons learned are communicated and remedial corrective actions closed.
Construction Contractor	<ul style="list-style-type: none"> ● Contractors are required to prepare site specific Environmental, Social, Health and Safety Management Plans and secure all the permits and licences prior to commencement of any civil works, ● Engage an experienced EHS specialist to offer OHS advisory and supervise all the works prior to commencement of any civil activities; ● Contractor should ensure that all their personnel or sub-contractor’s personnel has received proper induction and awareness arising as necessary on ESMP, codes of conduct, safe working procedures, health and safety management practices, and are aware of relevant site rules. ● Keep the health and safety records of their subcontractors or partners in a joint venture, and keep those records available for ECRP inspection at any time. ● Contractor will include environmental and social requirements in the procurement and contracting process including bidding documents, for potential civil works. ● Relevant requirements are included in contracts and subcontracts consistent with the requirements of Environment and Social Standards (ESSs); codes of conduct are required for contractors, subcontractors, primary suppliers, and their workers; ● Contractor’s commitment and compliance will be monitored in accordance to ESSs ● Contractor will be trained by ECRP on grievance redress mechanisms and their subcontractors are expected to do the same to the affected communities and other stakeholders. ● The contractor will develop a grievance mechanism to handle concerns of their employees. ● Conducting weekly HS Inspection and submitting the reports to ECRP Site

	<p>Engineer,</p> <ul style="list-style-type: none"> ● Contractors will provide Monthly and quarterly details on contractor’s oversight on environmental, social, health and safety (ESHS) performance ● Contractor shall have a Labor Management Plan (LMP), which conforms to the requirements of the LMP and Environmental Social Standards 2. ESS2, ● Contractors are required to avail PPEs to the relevant employees, when required and as deemed necessary ● Timely reporting of near misses, incidents, accidents and dangerous occurrence ● Participating in incident investigation and ensuring lessons learned are communicated and remedial corrective actions closed.
IOM Field Engineer	<ul style="list-style-type: none"> ● Supervision of contractor performance of implementation of the Construction ● Reporting any incidents or non-compliance with the ESMP to the ECRP Safeguards team ● Conducting weekly site inspection and Submitting reports to ECRP ● Making recommendations to the Safeguards Team regarding ESMP performance as part of an overall commitment to continuous improvement in implementing the ESMP and ensuring the ESCP and the ESF’s ESS Compliance.
General Public	<ul style="list-style-type: none"> ● Identify environmental and social issues that could derail the project and support project impacts and mitigation measures ● Assist in awareness campaigns

6.2. ESMP Implementation Schedule

S/ N	Activity	Responsibility	Pre-Construct ion (Month)	Construction (Month)	
				1	2
Environment and Social Management			1	2	3
	Formal Disclosure of ESMP	PMU & IOM			
	Develop Environmental/Social Requirements in Bid Documents for contractors	IOM			
	Allocate Budget for ESMP	IOM			
	Training of Contractors on the ESMP	IOM			
	Implementation of Environmental and Social Mitigation Measures	IOM			
	Supervision of pre-Construction and Construction activities	IOM			
	Supervision of ESMP Implementation	IOM			
	Environmental and Social Monitoring	IOM & PMU			
	Reporting on ESMP Implementation	IOM & PMU			

6.3. Proposed Budget a Reports

The total cost for implementing this ESMP will be borne by UNOPS and IOM for the environment and social safeguards activities in monitoring and mitigation. The table below breaks down the budget estimate and the responsibility for implementation of the ESMP.

Budget Estimate for ESMP Implementation

S/N	Item	Responsibility	Cost Estimate (USD)
1	HS, E&S monitoring and mitigation (flights)	IOM and PMU	20,000
2	DSAs	IOM and PMU	18,200
3	Training on ESMP Implementation	IOM and PMU	20,000
4	Car hire (XX days)	IOM and PMU	18,000
4	Miscellaneous 10% of subtotal		7,620
Total			83,8200

6.4. ESMP Disclosure

This ESMP shall be disclosed to the Public following a review and clearance by the WB. It will be shared with the county local authorities, contractors and community representatives to aid in monitoring and mitigation of environmental and social risks and impacts associated with the construction of the dikes. The local authorities will be encouraged to cite in their public rallies and official public correspondences the risks and impacts identified and proposed mitigation measures. The processes of engagement as outlined in the stakeholder engagement plan will be followed.

Activities and Responsibilities in ESMP Disclosure

Activity	Responsibility
Disclosure of the ESMP to the National Steering Committee and the National Technical Working Group.	PMU will liaise with IOM and the relevant government authorities
Disclosure of the ESMP at the State Ministry of Local Government and Law Enforcement	PMU will liaise with IOM and the relevant government authorities
Disclosure of the ESMP to the County Coordination Team and Payam Development Committees.	PMU will liaise with IOM and the relevant government authorities

Disclosure of the ESMP at the Boma/ community	PMU will liaise with IOM and the relevant community authorities
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6.5 Environmental and Social Monitoring Plan

The project will monitor overall environmental performance of the dyke construction work. For each of the environmental and social activities, the monitoring plan specifies the parameters to be monitored; location of the monitoring sites and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities.

In addition to the critical locations selected during the design stage, the environmental monitoring will also be done at the construction camp site and any other site as determined relevant during the rehabilitation works stage.

The following table presents the monitoring activities and responsibilities over the implementation of proposed mitigation measures for the dykes rehabilitation activities:

Environment and Social Monitoring Plan

Phase	What is the parameter to be monitored?	Where should the parameter be monitored?	How the parameter should be monitored?/ type of monitoring equipment	When should the parameter be monitored? (frequency of measurement or continuous)	Why should the parameter be monitored? (optional)	Institutional responsibility	Costs
Pre Rehabilitation							
	Incorporation of risks and impacts identified in the ESMP into the tender documents	Safeguards and Engineering team will inspect the bids documents in Leer and Rubkona before they are handed over to contractors	Verification of the tender and bids documents to ensure that they include environment and social	During recruitment of contractor and induction of contractor staff	To ensure the contractor comply with ESS and laws of South Sudan that promotes minimum removal of top soils	ECRP/ IOM, Contractor	

	Dyke design may be rejected by the government of South Sudan. And the site of the quarry may be changed	State Ministry of Physical Planning and County Department of Physical Planning, Dyke Management Committee	Tools used for excavations and dyke embankments such as backhoe tractors, compactors. In consultation with the local authorities, mark spots that should be preserved e.g. road edges	Twice from the time of verification on arrival to the site and during site inspection exercises	To ensure the contractor complies with ESS and laws of South Sudan	ECRP/ IOM, Contractor	—
	Potential damages to the existing infrastructure and facilities since a section of the dyke in Rubkona is along the road and extends to the market	Do field visits to sites of dyke rehabilitation and borrow pits. Mark and gazette the site in preparation for civil works	Observe use of ROW for other users especially along roads	This activity should be done before commencement of civil works	This parameter should be monitored to prevent damages to existing infrastructure and facilities in the vicinity and nearby the dyke and borrow pit sites.	Contractor, ECRP and County Department of Physical Planning and Urban Development	

	Reduced access through the area where the works are executed for pedestrians, vehicles,	At the dyke rehabilitation site, quarry mine site	Tools used for excavations and dyke embankments such as backhoe tractors, compactors. In consultation with the local authorities, mark spots that should be preserved e.g. road edges	Their activity is monitored before commencement of works	This parameter should be monitored to prevent damages to existing infrastructure and facilities in the vicinity and nearby the dyke and borrow pit sites	Contractor, ECRP and County Department of Physical Planning and Urban Development	10.000
	Community health and safety tools e.g. construction health and safety management plan	At the contractor's premises and site	Civil works inspections	Inspection reports	To ensure health and safety of community members and staff	Contractor, ECRP 1	5.000
Rehabilitation Phase			Material supply				
	Quarry/ borrow pit. Possession of an official approval or valid permit	Soil quarry site in Leer and Rubkona	Insight into the documentation	Prior to the commencement of works	Ensure compliance with environmental and social protection and health and safety at work	Contractor ECRP, County Dyke Management Committee	15.00

	Water disposal site: Possession of an official approval or valid permit	Drainage site in Rubkona town	Insight into the documentation	Prior to the commencement of works	Ensure compliance environmental and social protection and health and safety at work	Contractor, County Dyke Management Committee	6.000
Rehabilitation			Material transport				
	Air quality: Dust from Material transportation e.g. soils, sand Soils. Truck load covered or wetted. Road surfaces wetted to suppress dust from trucks	Job site and roads used for transportation of materials	Supervision and regulation of vehicle speed through densely populated areas like human settlements, hospitals, schools, market centres	Unannounced inspections during work, at least once per week	Little disruption to traffic as it is possible	Contractor, County Dyke Management Committee	5.000
	Traffic management: Hours and routes selected for contractor's vehicular trips	Job site such as roads used by trucks	Supervision	Unannounced inspections during work, at least once per week	To avoid accidents	Contractor, County Dyke Management Committee	3.000
Rehabilitation			Construction Site				

	Cultural goods and archaeological findings. The Presence of archaeological findings in the soil and triggering of chance find procedures to ensure that the local authority and community are aware of the findings and manage it.	At the Construction site in collaboration with the local authorities, archaeologist and ECRP	Supervision of earthworks	Archaeological Supervision by the competent state authorities in consultation with the indegnous community	For the sake of preservation of cultural heritage	ECRP, County/ State Ministry of Lands, Contractor	5.000
Rehabilitation/ Repair	<i>Potential water and</i> and soil pollution during drainage of water	At the rehabilitation site in Rubkona dyke sections	Visual supervision	Weekly	For prevention of soil degradation and pollution	Contractor County Dyke Management Committee	5.000
Rehabilitation/ Repair	Construction site	At the construction site	Visual supervision. Insight into the documentation	During the works execution	For the purpose of establishing a safe working environment	Contractor, County Dyke Management Committee	10.000

Rehabilitation/ Repair	Destruction of temporary crops such as vegetable gardens to allow right of way for rehabilitation machines,etc.	At the dyke rehabilitation sections and in the vicinity	Visually observations on targeted paths for dyke rehabilitation and encourage contractors to avoid crop destruction.	Before local community members raise complains and also reactionary to their complaints	To prevent the destruction of crops, woods, meadows/ grasslands etc.	Contractor, ECRP, County Dyke Management Committee	15.000
Rehabilitation/ Repair	Working hours control.	At the works execution location	Visually and compared with the construction site organisation plan.	Upon received citizens' complaints	To respect workers working hours per day and mitigating social problems	Contractor, County Dyke Management Committee	3.000
Rehabilitation/ Repair	Waste management during the work execution. There will be sites for preliminary accumulation of waste.	At the construction site	Visually and by comparison with the waste management report.	During construction works	For ensuring proper waste management Preventing pollution of water and soil because of improper disposal of excavated materials and construction wastes	Contractor ECRP, County Dyke Management Committee	5.000

	Effect on ground and surface water may cause turbidity	Water drainage site in Rubkona town	Drainage equipment inspection	During the rehabilitation work	To ensure that water drained out is disposed into approved site	Contractor, ECRP, County Dyke Management Committee	3.000
	Flora and fauna in the quarry and dyke embankment sections will be affected	Quarry sites and dyke embankments in Rubkona and Leer	Site inspection	During the rehabilitation work	To minimise loss of flora and fauna (micro and macro organisms)	Contractor, County Dyke Management Committee	5.000
	Loss of topsoil due to access roads, quarry sites and work areas.	Quarry site in Leer and Rubkona	Site inspection	During the rehabilitation work	To minimise loss of top soils	Contractor, County Dyke Management Committee	4.000
	Potential water and soil pollution from improper material storage, management and usage	At the contractor's camp site and operation areas (quarry and dyke)	Material Data Safety Sheet (MDSS) records	During the rehabilitation work	TO prevent risk of water and soil pollution from spillage or leakage of stored chemicals	Contractor, County Dyke Management Committee	5.000

	Water and soil pollution from improper disposal of waste materials	Designated waste disposal site authorised by the government	Inspection of trucks and disposal sites	During the rehabilitation work	To ensure that waste are separated and disposed in government approved sites	Contractor County Dyke Management Committee	5.000
	Poor handling of oils, fuels might cause spilling into the nearby wetlands and settlement during maintenance and repairs and refuelling at the construction site.	At the contractor's camp site, workshop and storage sites	Material Data SAFETY Sheet, inspection of equipment maintenance	During the rehabilitation work	to prevent spillage of oils, fuels into water bodies	Contractor County Dyke Management Committee	5.000
	Potential pollution of soil and water due to the drainage of waste waters from the construction site	At the Contractor's camp site	health and safety records/ site inspections	During the rehabilitation work	To prevent pollution of soil and water	Contractor County Dyke Management Committee	3.000

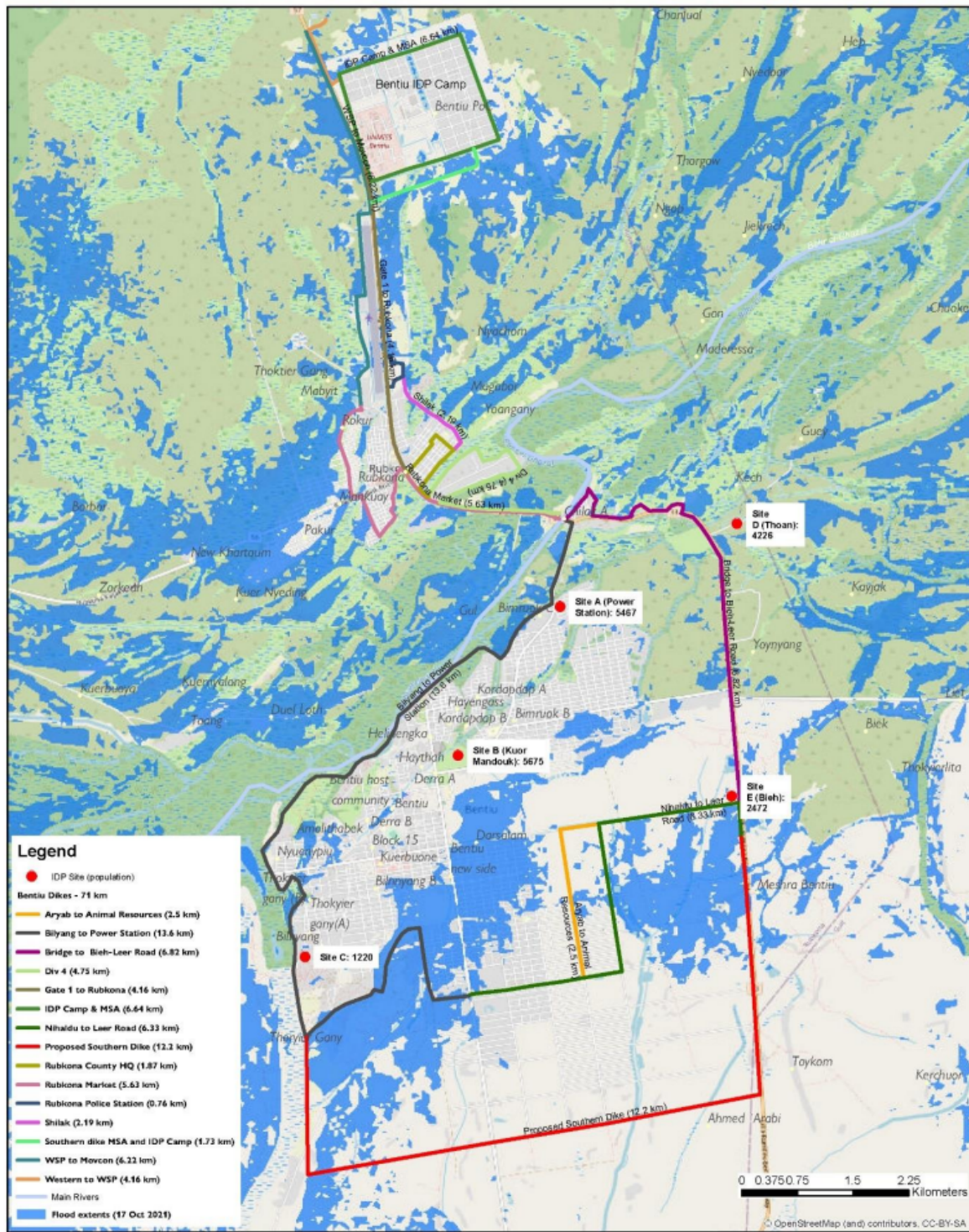
	Effect on land use such as settlement expansion	Dyke embankment sections	Settlement expansion	During the rehabilitation work	To prevent destruction of the dyke by housing infrastructure encroaching to the dyke site	Contractor, local authority	5.000
Rehabilitation/ Repair	Number of registered accidents existence of hygienic conditions for workers, Protective equipment application	At the construction site	Visual inspection on use of PPEs, hygiene conditions and insight into the register	Throughout the work period	To ensure adequate health and safety and working conditions, ensuring works execution in accordance with relevant labour legislation	Contractor, ECRP	3.00
Rehabilitation/ Repair	Quality of work and material used	At the construction site	Field monitoring and through register	Throughout the rehabilitation period	To ensure good quality of soils are used for dyke embankments	Contractor, ECRP	3.000
	Erosion of dyke embankments due to heavy rains, surface run-offs, pedestrians or livestock movements	At the dyke rehabilitation section	Monitoring of rehabilitation work to see of dyke structure withstands floods	Throughout the rehabilitation period	to ensure that the reinforced dyke structure is firm enough	Contractor, ECRP	3.000

Rehabilitation/ Repair	Clear delineation of access roads and work sites to prevent their expansion	At access roads and work sites	Site inspection, field observations	During construction works	Prevent loss of topsoil due to temporary access roads and work areas.	Contractor, ECRP	10.000
	Cleaning of access roads and work sites after rehabilitation works completion	At access roads and work sites	Site inspection, field observations	After construction works	Revegetation of the quarry enables rejuvenation of soils.	Contractor, ECRP	5.000
Rehabilitation/ Repair	Sprinkling of water to suppress the dust	At access roads and work sites	Site inspection, observation	During rehabilitation works	Preventing dusts related to the transportation of construction materials and truck traffic	Contractor	10.000
Rehabilitation/ Repair	Termination of construction works at the established time (e.g. work on daylight hours)	At access roads and work sites	Field inspection, observation	During construction works	To prevent noise and vibration disturbances	Contractor, ECRP	
						Contractor, ECRP	10.000

Rehabilitation/ Repair	Use of personal protective equipment	At work site	Site inspection	During construction works	Increasing staff safety	Contractor, ECRP	10.000
	Commit to worker's rights and provide Proof of lawful employment	Job site/ Contractor's office	Field inspection	Unannounced inspections during works execution	Ensure worker's enjoy rights guaranteed by Law	Contractor, ECRP	5.000
	Risk of accidents as a result of increase in traffic by material transporters	Access roads to and from quarry sites and dyke rehabilitation sections	Regulate vehicle speed along access roads	Unannounced inspections during works execution	To minimise road traffic accidents and save lives	Contractors, ECRP	5.000
	Labour risk of injuries from use of equipments or accidents	At the quarry site and dyke embankments sections	Personnel safety and health records	Throughout the rehabilitation period	To maintain staff safety and health	Contractor	---

	Risk to community health and safety e.g. traffic and road safety risks, accidents at barrow pits, UXOs, mines and explosive devices	At the quarry site and dyke embankments sections	Community and staff health and safety records	throughout the rehabilitation period	To enhance community and staff health and safety	Contractor, local authorities and ECRP	-----
Operation and Maintenance Phase							
	Handover the dykes to the County authorities	Handover documents at County HQs and tour the dykes	Dyke Documents	After completion of rehabilitation work	So the local governments of Leer and Rubkona Counties can operate and maintain the dyke	ECRP, Contractor, County Authorities and Community representatives	—
	Water logging along the dykes may become a breeding ground for vectors	Along the dykes and in the quarry mines	Field inspection to verify remediation works/ restoration of vegetation in the quarry mine and dyke basements	After completion of rehabilitation work	To clear out water logging and prevent vector breeding	Dyke Management Committee in the County	15.000

	Erect community access point to avoid the risk of vandalising dikes by community members who want access to water and livelihoods, livestock trappings	At the dyke sections	Field inspection	After completion of work and during dyke maintenance	To prevent breakage of the dyke by community members and livestock trappings	Contractor, County Dyke Management Committee	20.000
Rehabilitation/ Repair	Soil degradation in the quarry site(s) to extract raw materials for dyke embankments	Quarry sites in Leer and Rubkona	Site inspection at the quarry and dyke embankments sections	After the works completion	Ensuring that the site has been returned to quasi-original conditions, after rehabilitation site closure	Contractor, ECRP, County Dyke Management Committee	30.000



Code of Conduct, construction E&S specifications, GRM are all included in the parent document the ESMF and are attached as part of the contract of the contractor.